# "THE WATER IS OUR LAND": PEASANTS OF THE RIVER TOCANTINS, BRAZILIAN AMAZONIA

By

PENNIE L. MAGEE

A DISSERTATION PRESENTED TO THE GRADUATE SCHOOL
OF THE UNIVERSITY OF FLORIDA IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY

UNIVERSITY OF FLORIDA

1990

ACKNOWLEDGEMENTS

The research for this dissertation was funded by a Fulbright-Hays Doctoral Dissertation Research Abroad Fellowship, the Amazon Research and Training Program, and the Ford Foundation. While I wrote the dissertation I was supported by the Florida/ Brazil Institute, the Amazon Research and Training Program, the Tropical South America Program, and the Tropical Conservation and Development Program, all of the Center for Latin American Studies at the University of Florida.

Throughout my years of graduate study at the University of Florida, the Center for Latin American Studies provided me with a study carrel. The Amazon Research and Training Program supported me for most of those years with graduate assistantships.

I could not have completed this dissertation without the institutional and financial support of those mentioned above. But I also benefitted from the intellectual guidance afforded me by my committee, consisting of Dr. Marianne Schmink, Dr. Maxine Margolis, Dr. Kent H. Redford, Dr. Anthony Oliver-Smith, and Dr. Leslie S. Lieberman.

I had the great fortune to be part of a group of fellow graduate students who managed to mediate the terrors and indignities inherent in this effort, with a good deal of laughter, good will and moral support. We parlayed our inexperience and optimism into a concerted effort to understand the issues at

hand. The result was a study group, the Group for Advanced Amazonian Studies, which provided a forum for our maturing ideas. Gay Biery-Hamilton, Constance Campbell, Avecita Chicchon, Jon Dain, Karen Kainer, Cynthia Lagueux, Richard Piland, and Gary Shaeff were charter members of this group. Over the years, others joined the group and enriched our efforts with their own perspectives on the issues we tackled. Among them were Chris Canaday, Doris Capistrano, John Moon, Lisa Naughton, and Debbie Rose. I owe all of them a debt of gratitude for their support.

During my year of field work, Dr. Anthony Anderson generously provided me with office space, infrastructural support, and a field assistant. He was instrumental in helping me shape certain portions of my research, as were Suely Anderson and Edviges Ioris. Lyli Theodoro kept track of my mail and my comings and goings from the field, and taught me valuable lessons in patience and perseverance. In addition, I benefitted enormously from the friendship and intellectual challenges offered me through the members of his research project, especially Anna Fanzeres, Edviges Ioris, and Igor Mousasticoshvily Jr. During the brief period that Rebecca Abers joined the project, she was a delight--and whether she knows it or not, she was an essential contributor towards my efforts to unravel the mystery of what happened to the fish in the river.

I also owe many thanks to individuals within other institutions including the Museu Goeldi of Belém, INPA in Manaus, Themag in Rio de

Janeiro, Engevix in Tucurui, Commissão Pastoral da Terra in Cametá and Belém, who took the trouble to share with me with their own experiences and insights. In Belo Horizonte, Donald Sawyer offered me his hospitality and access to his extraordinary collection of materials on Amazonia. At the University of Florida, Bob Swett and Chris Canaday taught me how to calculate an area on a map by using a planimeter, and Chris unraveled some of my tables at the last critical moment. Indeed it is a privilege to have friends with many talents.

I thank the members of my host family in Paruru for letting me and my field assistant into their lives. I could not have done my research without their steadfast support, feeding us, caring for us when we fell ill, introducing us to the rest of the community, and teaching us about their lives. In keeping with anthropological tradition, I do not mention their names here, nor those of the many other people in Paruru who shared with us their perspective on the world. Nonetheless, their names are forever etched in my heart, along with a profound respect for the grace and dignity with which they carry out their lives.

Still more individuals deserve many more thanks than I can possibly convey. Among these are Pat Flaherty, Mário Jardim, David Kilcrease, Peggy Lovell, Elizabeth Lowe-McCoy, Terry McCoy, Igor Mousasticoshvily Jr., Claudio and Suzana Padua, Lúcio Flávio and Lenil Pinto, Cleusa Rancy, Steven Sanderson, Marianne Schmink, Michael Whittington, and Charles Wood.

Charles Wagley has been my source of inspiration throughout my years of graduate school. He encouraged my initial interest in Amazonia, provided financial support at two important junctures, and moral support always. He and Cecilia Wagley welcomed me into their lives and nurtured me in their own special way. Their friendship is a gift that forever changed my life.

Marilia Carvalho Brasil accompanied me to the field as my assistant. She proved to be the ideal intellectual ally as we set about carving a story out of what we observed and measured. That in itself is a gift without measure. But she also offered me a friendship of rare quality. It was a profound pleasure to grow intellectually and personally alongside her. I dedicate this dissertation to her.

TABLE OF CONTENTS


page

ACKNOWLEDGMENTS ..... ii

ABSTRACT ..... viii

CHAPTERS

1 THE WATER IS OUR LAND: INTRODUCTION ..... 1

From Amerindian to Caboclo:
the Formation of Contemporary Caboclo Society ..... 8
Research Setting ..... 25
Conceptual Framework ..... 29
Methods ..... 31
Structure and Logic of the Dissertation ..... 34

2 RIVERWORLD ..... 38

Arriving in Paruru ..... 43
The Homogeneous Community ..... 45
The Heterogeneous Community ..... 47

3 HARVESTING WATER AND LAND ..... 50

Winter Season ..... 51
Summer Season ..... 59

4 THE TIDES OF CHANGE ..... 69

Virola and Andiroba ..... 69
Rubber ..... 71
Cacao ..... 73
Açai ..... 76
Fish ..... 77

5 WORK, RESOURCES AND WELL-BEING ..... 81

Domingos Silva and Vicente dos Santos ..... 84
Determinants of Resource Availability ..... 87
Living Standards ..... 89
Resource Availability and the Deployment of Household Labor ..... 92
Wage Labor ..... 97

6 AFFIRMING THE COMMUNITY: FESTIVALS AND FUNERALS ..... 105

The Círio ..... 108
Esmola do Santo ..... 112
The Holy Spirit and Politics ..... 113
Funeral ..... 115

7 STEMMING THE TIDE ..... 121

Local Impacts of the Tucuruí Dam ..... 123
The Role of the Catholic Church and the Rural Workers' Union ..... 126

8 RIVER VOICES ..... 134

GLOSSARY ..... 137

REFERENCES ..... 140

BIOGRAPHICAL SKETCH ..... 151

Abstract of Dissertation Presented to the Graduate School
of the University of Florida in Partial Fulfillment of the
Requirements for the Degree of Doctor of Philosophy

"THE WATER IS OUR LAND":
PEASANTS OF THE RIVER TOCANTINS, BRAZILIAN AMAZONIA

By

Pennie L. Magee

December 1990

Chair: Marianne Schmink
Major Department: Anthropology

This dissertation analyzes the socioeconomic and ecological changes occuring in the island community of Paruru in the Tocantins River, Pará state, Brazil. Islanders have traditionally made a living based on fishing and the extraction of forest products, in an environment characterized by daily and seasonal tides which flood the island.

Development policies promoted by the Brazilian government over the past twenty five years shows that the policies have had an impact on islanders' resource base. Among these policies are the incentives for commercial logging and fishing, and the building of the Tucurui hydroelectric dam on the Tocantins River. Key cash and subsistence resources have gradually been depleted, leaving residents with increasingly fewer options for sustenance.

This study examines how islanders are responding to the

impoverishment of their resource base. The findings show that households use different strategies to cope with the pressure on their resource base. Those households with fewer resources put more people to work in activities on the island, and are more likely to send members off the island to work in wage labor. Households with more resources more frequently hire wage labor than do those with few resources.

The process by which incipient socioeconomic differentiation is taking place is captured in the community's annual celebration in honor of its saint. The traditional date of the celebration was associated with the collection of oleaginous fruits harvested as a cash crop. In 1985, the community changed the date of the celebration to coincide with the peak season of the fruit of a palm which has traditionally been harvested for subsistence. Islanders now sell this palm fruit for cash, which indicates that islanders are left with increasingly fewer strategies for making a living, and are ever closer to losing control over their means of production.

The socioeconomic differentiation and incipient proletarianization underway is the root of a new-found political awareness. Islanders are mobilizing politically against the Tucurui hydroelectric dam, which has become the symbol for the cause of their impoverished resource base.

# CHAPTER 1
# THE WATER IS OUR LAND: INTRODUCTION

The story which unfolds in these chapters takes place in the world of rivers. In this world, people build their houses, feed their families, and worship their saints according to the ebb and flow of the daily tides, and the rise and fall of the seasonal high and low waters. The river provides the fish of the daily meal, and nutrients to the crops; it is drawn into plastic buckets to prepare the food, cleanse the body, and quench the thirst. The river meets people at their front door every morning, and sometimes, during the high waters of the winter season, moves univited into their houses.

We know very little about this world of rivers, at least in the case of Amazonia. In part this is because of its sheer vastness. The Amazon Basin drains about 1/3 of the land surface of South America. The main channel of the Amazon river is about 6500 kilometers long, and has some 1000 tributaries (Salati and Vose 1984). Scholars have dedicated considerable attention to understanding certain ecological components of this basin, including Egler and Schwassmann (1964), Goulding (1981), Richey, Nobre and Deser (1989), Salati and Vose (1984), Salo et al (1986), Sioli (1967, 1968) O'Reilly Sternberg (1975). Because of them, we understand some basic principles of the basin's

limnology, hydrological cycles, and fish ecology.

If some scholars have directed their attention to the biological aspects of the basin, others have concentrated on the human aspects. In the 1970s, the literature focused primarily on events taking place in the uplands, or *terra firme*, and with good reason. The Brazilian government set in motion a series of development policies which promised to change forever the face of the Amazon region. One of the government's early projects was the Transamazon highway, an ambitious project to link the eastern coast of Brazil to the westernmost regions of Amazonia.

Of particular interest to social scientists was the colonization scheme which accompanied the building of the highway. Over the past twenty years, the fate of the colonization projects has been thoroughly documented (see, for example, Bunker 1985, Butler 1985, Miller 1985, Moran 1979, 1981, Schmink 1985a, Schmink and Wood 1985, Smith 1982, Wesche 1985, Wilson 1985). Scholars have also examined other actvities which emerged in response to government policies during the past two decades, such as cattle ranching (Buschbacher et al. 1987, Hecht 1985), gold mining (Cleary 1990, Schmink 1985), and logging (Browder 1986).

The very wealth of literature on Amazonian development hides a fundamental gap in the research about this cast of characters. As Parker (1985b) notes, a survey of the recent literature shows that traditional Amazonian peasants known as *caboclos* have been systematically overlooked as

research subjects. Most of the important books on Amazonia do not include *caboclos* as a topic (see for example, Barbira-Scazzochio 1980, Hemming 1985, Moran 1983, and Schmink and Wood 1984). Furthermore, some scholars (such as Bunker 1985, Foweraker 1981) have incorrectly lumped small-scale farmers, colonists, and migrants from other areas of Brazil, into the catch-all category of *caboclo*. To be sure, these groups have their place in the drama unfolding in the Amazon. However, as Parker (1985b) points out, it is a disservice to them and to *caboclo* groups to obscure the very real differences between each of these groups.

Migrants usually live in settlements or along roads on *terra firme* (the interfluvial regions) which are tied to projects such as gold mines. If they are able to gain access to land, they may practice small-scale agriculture; otherwise, they sustain themselves primarily by selling their labor. In the state of Pará, where this study is situated, many come from the northeastern region of Brazil. By contrast, *caboclos* tend to live in relative isolation along rivers and make a living primarily by extracting forest products supplemented by small-scale agriculture, hunting and fishing. They are semi-independent producers who exchange their goods through a network of traders. They engage in wage labor on a seasonal basis, but usually incorporate this sort of activity as one of many sustenance strategies to employ throughout the course of the year. Their cultural heritage comes from the interaction between Amerindian populations and European (principally Portuguese) settlers

between the late 16th century and the early 19th century. In the 19th century, migrants coming to Amazonia from the northeastern region of Brazil added their African heritage to the emerging *caboclo* population.

The exceptions to scholarly neglect of the *caboclos* are first and foremost Wagley (1976 [1956]) and his student and colleague Galvão (1976 [1956], who were among the first to study Amazonian *caboclos*. In the years following, several scholars examined other caboclo groups (Miller 1975, Moran 1974, 1975, Pace 1986, Parker 1981, 1985a, Ross 1978, Schmink 1985b, Weinstein 1985).

Caboclos merit further attention because their culture is an important human adaptation to the Amazonian environment (Moran 1974); they live in a wider variety of macro and micro-environments than intact Amerindian groups have since the mid-18th century (Parker 1985b). As Parker (1985b:xviii) notes, "Caboclos, at the center stage in the human theatre of Amazonia, constitute a vital storehouse of knowledge regarding adaptive strategies employed in response to the complex and heterogeneous ecology of the region. This is important not only because of the wide range of micro-environments they exploit but also because they are often the only inhabitants of specific types of environments (e.g., the *várzea*, or floodplain)".

Recent research shows that *caboclo* communities are undergoing changes in the way they sustain themselves. Schmink (1985b) found that the caboclo way of life was in the process of disappearing in the riverine community of São Felix, Pará state. Although the impetus for change was the building of a

road, other activities (such as gold mining) were also associated with the changing socioeconomic system. Over time, productive activities such as agriculture and cattle ranching replaced the traditional extractive activities. There was increased pressure on certain resources, such as the fish and timber, especially mahogany (*Swietenia macrophylla*).

Wesche (1985) found that when the town of Itacoatiara, Amazonas state, was integrated into the network of roads built by the Brazilian government between 1970 and 1980, caboclo society underwent significant transformation. Residents of the town traditionally relied on resources available from the three principal ecological zones: the river, the floodplain, and the *terra firme* (dry land). The river was the means of transport; supplied nutrients to the floodplain soil; and provided fish as the main source of protein for the diet. The floodplain produced cash crops such as cacao and jute, and food crops such as manioc, maize and beans. The *terra firme* was the source for most of the extractive resources, such as Brazil nuts, rubber and lumber. Residents also raised cattle, moving them on a seasonal basis between the floodplain and the *terra firme*.

This system suffered changes when the town became integrated into the road network. The rural-to-urban migration which accompanied the building of the road helped shift the focus of livelihood from the river to the road zone. Wesche found that over time, caboclos lost their ties to the resource base. Fish stocks from the river were depleted because of increased commercial fishing

which supplied both the growing urban population and markets elsewhere which were now linked by the road. The Brazil nuts and other extractive products of *terra firme* were supplanted by pasture and agricultural enterprises. Hence caboclos of Itacoatiara no longer have access to the resources once available in the various ecological zones. The end result has been "a progressive destabilization of the livelihood of caboclo society" (Wesche 1985:136).

As these studies indicate, a fundamental element of caboclo culture is the close link to a heterogenous resource base which people can exploit in a flexible manner. When that resource base is compromised, so is the caboclo way of life.

My own study focuses on the recent changes experienced by a *caboclo* community whose inhabitants exploit a specific type of environment. Paruru, as the community is known, is situated on an island in the main channel of the Tocantins River in Pará state, Brazil. The island is part of the estuarine region of the Amazon basin; as a consequence, the daily tides of the Atlantic ocean control the level and direction of the water which flows past island dwellers' houses. Water covers large portions of the island on a daily basis, thus limiting the opportunities for activities such as small-scale agriculture. Local residents make a living based primarily on the extraction of resources such as cacao (*Theobroma cacao*), rubber (*Hevea* sp.), and fish.

An important feature of their sustenance strategies has been the flexible

approach to the exploitation of the available resources. Over the course of a year, the principal activity of a given season is determined by what resources are ready for harvest. Households supplement the livelihood they gain with the principal resource by also exploiting other, lesser resources available during the same period of the principal resource. Hence households operate on the assumption that they will have several options from which to choose at any given time; to do so, they count on having a fairly wide range of resources--what I call the resource base.

My findings indicate that residents of Paruru are facing a critical moment in their way of life because they are facing irreversible changes in the resource base from which they make a living. Over the past twenty five years, the islanders' resource base has become increasingly narrow as a consequence of specific changes in markets, and islanders' responses to those demands. A more recent impetus for change has been the building of the Tucurui hydroelectric dam upstream from Paruru, completed in 1984.

Because islanders no longer have access to a diversity of resources, they are not able to use the flexible strategies they have used in the past to sustain themselves. They are losing the close ties to their resource base. Their responses to the present situation take several forms. Islanders put an increasing amount of pressure on the few resources they do have available. They also now find that the socioeconomic ties (based on marriage, kinship, or trade relations) on which they depended in the past cannot sustain the

demands put upon them. As islanders have come to the realization that they can no longer find the solutions to their difficulties by relying on the relationships within the community, they are turning to the outside world to address their current situation: they are mobilizing politically in protest against the Tucurui dam.

As Paruruenses respond to their current situation, they participate in their own transformation into a society characterized by new socioeconomic relations. Metaphorically speaking, they presently have one foot in the traditional world of caboclos as independent producers who make a living based on a wide range of economic activities oriented to the opportunities and constraints of the environment. They have the other foot poised to take one step closer to the world of proletarianized rural dwellers who make a living by selling their labor and have, at best, limited access to a natural resource base.

Change is a gradual process, however. As we shall see from the following section, caboclo culture itself is the outcome of a process of socioeconomic transformation which has taken place over the past four centuries.

## From Amerindian to Caboclo: the Formation of Contemporary Caboclo Society

Fundamental change occurs when the established system of access to land and control of labor by which a group of people makes a living, is no

longer viable. The changes take place as the result of the interaction between different groups of actors, all of whom try in some fashion to gain (or retain) access to and control over land and labor. In the process, people forge new ways of making a living and with them new cultures.

Over the last four centuries, two central components of the socioeconomic history of the Brazilian Amazon have undergone transformation in a series of stages: labor and the market. In the process of the transformation, a new culture has emerged: that of the *caboclo.*

I divide the history of the Brazilian Amazon into seven distinct phases: the pre-Jesuit, the Jesuit, the Directorate, the post-Directorate, the rubber boom, the post-rubber boom and the contemporary period.

Pre-Jesuit period (pre-conquest to 1653)

Recent research indicates that prior to 1500, the socioeconomic organization of Amazonia included a wide range of culturally diverse communities. These ranged in size from small bands of hunters and gatherers, to permanent settlements which supported tens of thousands of people living in one place under complex sociopolitical organization. They labored only for subsistence and trade with neighboring tribes (Denevan 1976, Roosevelt 1987).

Accounts of the discovery of Brazil establish that the Portuguese mariner Pedro Alvares Cabral reached the eastern shore of central Brazil in 1500. However, Brazil actually was 'discovered' in stages; as Parker (1985c)

notes, the Amazon River was discovered for Europe by a Spanish explorer in January, 1500, several months before Cabral landed on the Atlantic coast of Brazil. It took the better part of the 16th century before Europeans came to colonize the Brazilian Amazon. Until Brazil's independence in 1822, the Amazon was a separate colony, known as the state of Grão Pará and Maranhão.

The Dutch and the English established trading posts in eastern Amazonia: the Amerindians supplied the Europeans with fish and forest products for export, in exchange for tools and trinkets. Gradually, settlements grew around the trading posts. By 1615, the Dutch and English exercised considerable control over the region (Parker 1985c).

During this same time, the Portuguese adopted a more aggressive policy towards controlling their rights to the land occupied by the Dutch and English. By 1634, all Dutch and English were expelled from the Brazilian Amazon. The Portuguese then focused their attention on extracting forest products for export, which included cloves, vanilla, annatto fruit, sarsaparilla, cacao, senna, oleaginous seeds, woods, and barks (Sweet 1974, Parker 1985c). As Parker notes, "Insofar as these extractive products formed the economic foundation of the fledgling colony, the Amerindian became a critical factor in the economic equation" (1985c:7). They knew the rainforest intimately, and could locate and collect these forest products much more efficiently than any outsider.

So important did the Amerindians become as a source of labor, that the

Portuguese resorted to slave raids of the densely-populated river settlements to capture more labor. Parker (1985c) notes that by 1630, few villages in the lower Amazon valley had escaped the effects of slave raiding and the spread of European diseases. Amerindians who did survive, moved deeper into the forest, out of reach from slave raiders.

The Portuguese Crown encountered increasing difficulties in gaining access to and control over labor supplies in the Amazon region. To resolve these difficulties, the Crown sent Jesuit priests to the Amazon in 1653. Their mandate was to assume control over all Amerindian populations under Portuguese control and to thus gain access to their labor (Parker 1985c).

Jesuit period (1653-1751)

When the Jesuits arrived in the Amazon region in 1653, they set up their missions (aldeias) along tributaries of the Amazon River. They promoted a *língua geral*, a pidgin version of the Tupi-Guarani dialects. It was an effective way to assume control over the Indians; the language was in essence a barrier against the Portuguese-speaking settlers in the region. The language also facilitated communication between tribes that up to then had been isolated linguistically from each other. Through the *língua geral*, the priests built up an extensive trade network which proved to be a powerful force. The priests became a significant presence in the region, so that by 1751 they controlled 12,000 Amerindians in 63 missions (Hemming 1978:455 cited in Schmink and

Wood forthcoming). It was they who decided when and how to allocate Indian labor to settlers.

This period forever altered the patterns of labor and settlement that existed before the Portuguese came to Amazonia. Under the direction of the Jesuits, Amerindians now had to provide their labor to Royal authorities and to colonists, which in many cases amounted to virtual slavery. Numerous Amerindians now lived in the aldeias in high concentrations, and were dependent upon the priests for goods and services (Parker 1985c).

Directorate (1751-1798)

The degree of control the Jesuits exercised over the large amounts of land and labor in Amazonia became a point of increased tension between the priests and colonists. Upon assuming office in 1751, the Marquis de Pombal investigated settlers' complaints, and concluded that "...their monopoly over export trade, colonial retail markets, food production (particularly meat and fish), and labor markets was clearly insupportable" (Parker 1985c:23). The Marquis appointed his brother, Francisco Xavier de Mendonça Furtado, as governor of the colony--Grão Pará e Maranhão--and charged him with expelling the priests.

The priests were expelled in 1759, and a new political and economic order was implemented. Furtado published his Directorate (Diretório), which laid out his plans for controlling Amerindian labor. The *aldeias* were

consolidated into larger settlements, and their control passed into the hands of the Directors appointed by Furtado. The Directorate banned the *língua geral*, and declared Portuguese to be the official language. Names of villages were changed to Portuguese; Indians were encouraged to wear European-style clothing; and housing types were modeled on European peasant dwellings, to discourage communal living and promote the European concept of family (Parker 1985c).

The Directors were charged with allocating Indian labor to colonists and authorities. In each village, the labor force was divided into two groups: one group was allocated to agriculture and the collection of forest products for the village, and the other group was allocated to the settlers. Those Indians allocated to settlers were to work for no more than six months in such a capacity, and were to receive a wage for their labor.

It was during this time that a new economic relationship began to develop: Indians came into contact with river traders known as *regatões*. These traders became the principal connection between the scattered collectors of forest products and the exporters who delivered the products to markets elsewhere in the world. Still other traders provided an important intermediary link in the trade network by setting up posts at the junction of rivers or in small towns. Here is the beginning of an extensive system of credit and trade middlemen which would come into its own during the rubber boom of 1850-1910 (Schmink and Wood forthcoming).

Post-Directorate (1798-1850)

When the Directorate was abolished in 1798, populations which had lived in the settlements became scattered along the rivers, streams and lakes of the Amazon basin, living either in small settlements or as isolated households. They made a living as independent producers who primarily collected forest products. They were linked to the market by the complex network of small traders (regatões) with whom they had come to deal during the Directorate.

Two important events changed Brazil's system of access to land and labor during this period. Just before Brazil became an independent country in 1822, the government changed the system from that of land grant (donatário) to one of *posse*. Hence control over land changed from a system where the right to own land was granted to individuals by the government, to one in which individuals had the right to own land by virtue of one's occupation of the land.

The second event was the Cabanagem revolt of 1835-36 in the state of Pará. Anderson (1985) interprets the revolt as a clash between the factions of the urban elite of Belém. Accounts of the revolt are surprisingly scarce, and hence it is difficult to explain the precise nature of the conflict. Nonetheless, one thing is clear: the violence of the revolt depleted the labor supply of the state. Nearly 1/4 of the population of the state was killed, and countless survivors fled in the ensuing disorder. With the decimation of their work force, the power enjoyed by plantation owners and ranchers was undermined and a

political and economic vacuum ensued (Anderson 1985, Schmink and Wood forthcoming).

Rubber boom 1850-1910

By the time the rubber boom began in 1850, all the elements were in place for a new system of land and labor allocation. A new group took the place of the plantation owners and ranchers: The merchants, traders and exporters who had long plied the rivers for forest products obtained from Indians and their descendants, rose to prominence when they took advantage of their connections to supply rubber to the world market.

The French naturalist Charles Marie de La Condamine is credited for taking to Europe latex from rubber trees (*Hevea brasiliensis*) in the Amazon. He had seen Indians tapping the trees, coagulating the liquid, and making syringes, boots, bottles and toys. In 1745 he took some of this latex to France, published a major study on its properties, and actively undertook the promotion of its many uses. By the late 18th century, Europeans had found many new uses for the "rubber", as the English called it. Rubber syringes and galoshes came into widespread use by the early 19th century, and the Amazon exported the latex to Europe to meet the demand (Weinstein 1983).

It was not until after 1839, however, that there was a significant increase in the demand for rubber. When Charles Goodyear discovered the process of vulcanization in 1839, he overcame the major limitation of crude rubber: it

tended to become hard in the cold and sticky in the heat. With vulcanization, however, rubber was resistant to both heat and cold, and was useful for a new range of products such as belts, hoses, suspenders, shoes and raincoats (Weinstein 1983). Rubber became an important component of industrial expansion and economic growth in industrializing nations.

When steamships were introduced in 1853, this new mode of transportation reduced the amount of time it took to transport the rubber from the Amazon forest to the European port. In 1888, the pneumatic tire was invented, and soon the demand for rubber skyrocketed, as people rode bicycles and later, automobiles which used the tires.

Until the 1880s, the Amazon was virtually the only supplier of rubber. It was only after 1912, when rubber plantations in Asia were successfully established, that the Amazon lost the corner on the market (Weinstein 1983).

During this period, Amazonian caboclo society began to take on some distinctive features. One such feature was the system of credit and exchange known as *aviamento.* Over time, the system for extracting and marketing the latex came to include up to six levels of middlemen, from the local rubber tapper to the foreign manufacturer (Weinstein 1983). At the bottom of the hierarchy were the rubber tappers; they exchanged the rubber at a local trading post operated by a local landowner or an individual who worked on commission. Trading post owners paid the rubber tappers in kind at inflated prices, so that nearly all rubber tappers were in debt at the trading post. The

trading post owner was, in his turn, indebted to a local supplier in a nearby town. The local supplier shipped the rubber to a merchant house in Belém. The merchant house then sold the rubber to export houses, which in their turn sold the product to manufacturers throughout the world.

The social relations of the aviamento system were characterized by personalized patron-client relations. Wages were virtually uknown; instead, the economy was based on exchange. The system provided some measure of security to those involved in the network by ensuring, through a relationship based on debt and obligation, an indirect contact with the world market (Schmink and Wood forthcoming).

Within this system of aviamento, the rubber tappers were a class, in that they shared a certain relation to the means of production. They produced a commodity (rubber) for the external market and they combined this activity with subsistence activities. They were semi-migratory, staying in one place for the rubber tapping season, and perhaps moving elsewhere to hunt during the rainy season. They organized their production around the individual, or the family unit. They were dependent on a patron for certain economic resources, but struggled to maintain some degree of autonomy (Weinstein 1985).

In the late 1800s, migrants from the northeastern region of Brazil contributed a new element to Amazonian caboclo society. They were recruited by rubber traders who needed more labor to supply to world demand for rubber. The northeasterners were in most cases willing to come to the region

because their own region was being devastated by a drought between 1877 and 1900. After the rubber boom, many remained in the region and provided a lasting northeastern component to Amazonian society.

In the Amazon, the rubber boom peaked and then crashed in 1910. The aviamento system had been experiencing difficulties in keeping up with the rapidly increasing demand for native rubber. When rubber plantations in Asia began to produce in 1910, Brazil could not compete with the lower costs of production, and so lost control of the market.

Post-rubber boom 1920-1964

In the years following the rubber boom, *caboclos* continued to make a living in a fashion in much the same way as they had before. They hunted, fished, cultivated small agricultural plots and extracted forest products for the external market. Animal pelts and Brazil nuts became important extractive commodities; the aviamento system was changed to accomodate these new products, and money became a more important feature of the economy (Schmink and Wood forthcoming).

The post-rubber period was a time of change elsewhere in Brazil. When Getúlio Vargas assumed the presidency in the 1930s, he set about expanding the country's industrial base. As the country industrialized, power once held by the agricultural elite came under the control of the urban elite that was investing in manufacturing (Dean 1969, Foweraker 1981, Schmink and Wood

forthcoming). The federal government assumed a strong role in determining the direction the economy was to take.

World War II brought a brief ressurgence of the rubber trade to the Amazon, when the United States grew concerned over losing access to the supply lanes for rubber in Asia. In 1942 the Brazilian and U.S. governments signed the Washington Accords, a five-year agreement which promised, as a principal focus, to boost rubber production in the Amazon. The U.S. provided credit, production, transportation and financed the recruitment of workers from Northeast Brazil to work in rubber tapping (Dean 1987, Martinelli 1988).

The U.S. government also sponsored public health care for the workers, who suffered from poor working conditions and especially malaria (Schmink and Wood forthcoming, Wagley 1976). It was during this time that anthropologist Charles Wagley was charged with developing a public health care system (SESP) for the rubber tappers. While he worked on this project, he stayed in a small riverine community which was later to become the subject of his classic study of an Amazonian community (Wagley 1976).

After World War II, the Brazilian government espoused import substitution industrialization as the goal of development policy for the country. Urban areas grew rapidly, while the agricultural sector continued to expand in response to the new internal demand. These factors stimulated the beginning of diversification away from rubber production in the Amazon region (Schmink and Wood forthcoming).

President Vargas created the Superintendency for the Valorization of the Amazon (SPVEA) in 1953 to finance development projects in accordance with his directives. Although SPVEA did not achieve many of its stated objectives, it did play an important role in two events which had a profound impact on the Amazon region and set the stage for the development policies undertaken by the military government beginning in 1964. The first event was the building of the Belém-Brasilia highway, completed in 1960, that provided the first ground link between the capital city of Pará state and the southern region of the country. The other event was the promise of new credit lines through the Amazon Credit Bank. With this incentive, local elites were able to begin to appropriate land and to invest in activities such as agriculture and ranching. In some places, their new investments competed with the traditional extractive activities.

These policies stimulated the beginnings of a fundamental change in the political and socioeconomic organization of Amazonia. In some places, merchants seized land owned by their clients as payment for outstanding debts, then charged rent to the producer who wished to continue to use the land or its products (Schmink and Wood forthcoming). High inflation rates in the late 1950s and 1960s put many trading post owners (who had survived the previous fluctuations in the price of rubber) out of business. Consumer goods were introduced into the rural areas, which stimulated the use of cash; the aviamento system was undermined. The stage was set for a market in land

and labor which began to function during the 1970s (Schmink and Wood forthcoming).

Contemporary change, 1964-1989

A new period of economic development began in 1964 when the military seized control of the Brazilian government. In order to modernize the economy, the military regime encouraged foreign investment and stimulated capital investment in the domestic industrial sector. The regime did so with a strategy that relied on political repression and on the centralization of power. The model for development was successful for a period of time: the years between 1968 and 1974 brought unprecedented economic growth (Bunker 1985, Schmink and Wood forthcoming).

The Amazon region, with its wealth of natural resources and vast expanses of land, was a central component of the military government's plan for the country's development. The government encouraged investment in the region through a series of fiscal incentives designed to attract (and capture) the taxable incomes of entrepreneurs. The incentives were financed through the Amazon Bank (BASA). SPVEA's successor--the Superintendency for the Development of the Amazon (SUDAM)--administered the federal programs beginning in 1966 (Mahar 1979).

Two activities which expanded rapidly during the 1970s in the state of Pará under this set of policies were cattle ranching and logging (Browder 1986,

Hecht 1985, Schmink and Wood forthcoming). The impact of these two activities in the *terra firme* region has been extensively documented (see, for example, Browder 1986, Bunker 1980, 1981, 1985, Buschbacher et al. 1986, Foweraker 1981, Hecht 1985, Pace 1987, Parker 1981, Schmink and Wood 1984, 1987). However, the growth of the logging sector in particular had a profound impact even on the estuarine region of the state. Boats owned by logging firms plied the rivers for *Virola* and other species to be used for urban construction and for export. The intensive exploitation of these species over a period of fifteen years contributed to the depletion not only of the trees themselves, but to the depletion of the oleaginous fruits of the *Virola* which had in previous periods played a central role in the extraction and trade-based economy of the riverine region. In island communities such as Paruru, the depletion contributed to the process of undermining the availability of cash-earning resources.

In 1967, a huge deposit of iron was discovered in the Carajás region of Pará state. In 1970, the government entered into a joint venture with the state company--Companhia do Vale do Rio Doce (CRVD)--to exploit the iron deposit. Carajás became the most important region of mineral resources, with enough iron ore to supply world markets for sixty years, and with deposits of other minerals such as manganese, nickel, copper, aluminum, cassiterite, wolframite and gold. The discovery of a four billion-ton deposit of bauxite at Trombetas made Brazil the world's third largest supplier (Schmink and Wood

forthcoming).

In 1973, a regional power company (ELETRONORTE) was created to supply the demand for new sources of hydroelectric power to exploit these mineral resources. In 1974, construction began on the Tucurui dam, the first in a network of hydroelectric dams, on the Tocantins River of Pará state.

During the ten years it took to complete the first phase of the dam and close the floodgates, the Brazilian political and economic context underwent significant change. In 1974, the country was governed by a military regime which accomplished astonishing economic development at the expense of public political discourse. By 1984, the regime had given way to political *abertura* (opening) and free elections, but the staggering national debt burdened the economy.

This new political and economic context set the stage for an important phase in caboclo society on the Tocantins River. The political climate encouraged debate about the effectiveness of the previous government's development policies, which had promoted temporary economic growth at the expense of social equity (Schmink and Wood forthcoming).

Throughout the late 1970s and early 1980s, Indians, rubber tappers, gold miners and small-scale farmers had begun to resist the development policies which wrested away from them the control over and access to land and resources. In many cases, the Catholic Church played an active role in organizing the resistance (Pace 1987, Schmink and Wood forthcoming). In the

Tocantins River region, the resistance centered around the expropriation and resettlement efforts undertaken by ELETRONORTE in order to clear the projected reservoir area for the Tucurui dam (Biery-Hamilton 1986). They learned that an effective strategy to gain concessions from the government was to undertake concerted resistance. If a group made its demands loudly enough, the government would have to intervene in the conflict and, it was hoped, rule in favor of the powerless (Schmink and Wood forthcoming).

Residents of the islands in the Tocantins River did not engage in resistance until the floodgates closed on the Tucurui dam in 1984. Since they lived downstream from the dam, they were not affected by the resettlement program implemented around the reservoir area. It was not until the floodgates closed that they realized that their very livelihood was in jeopardy just as surely as was their counterparts' above the dam. Island communities traditionally relied on fish for the daily diet, as food for their pigs and chickens, and as a medium of exchange for goods on the mainland. Santos et. al. (1984) identified over 300 species of commercial fish in the Tocantins River before the floodgates closed. Although islanders had witnessed a gradual erosion of their resource base over the previous two decades, the dam struck the final blow. Most fish species disappeared from the river, and islanders found themselves without a central source of food and exchange. As a consequence, traditional household and community strategies for making a living were undermined. Island communities such as Paruru were unable to

solve their dilemma alone and hence began a concerted effort to resist the attack on their way of life. It is too soon to predict the outcome of the resistance, but one thing is certain: islanders of the Tocantins River are at a critical moment in their history. If they resist successfully, they may be able to continue making a living as caboclos. If they are not successful, they may very well join the ranks of the wage workers on the mainland.

## Research Setting

Paruru is one of nine communities settled on an island of the same name, in the Tocantins River of Pará, Brazil. It has a population of approximately 400 people, while the island as a whole has some 3,500 residents. The entire island measures approximately 118 square kilometers, and is one of many scattered along this easternmost tributary of the Amazon River. In 1980, nearly 40,000 people lived on the islands between the Tucurui hydroelectric dam and the mouth of the river near the capital city of Belém.

At first glance, the island community of Paruru appears to have been bypassed by the political and economic forces which have shaped other places in the Brazilian Amazon region. There are no gold mines, no sprawling cattle ranches. There are no dusty roads, no trucks loaded with logs, no smoldering forests. Families still live near their relatives, on land they inherited from their parents. They hear their news from battery-operated radios instead of television, and light their homes at night with small kerosene lamps instead of electric light bulbs.

On closer inspection, we see evidence of dramatic changes in this traditional riverine community. Fish traps called *cacuris* rot in place along the channel banks, abandoned for good; fishing poles and cast nets gather dust where they have been thrust high up into the rafters. Sometimes buying the kerosene to light the one small *lamparina* at night means not being able to afford the *farinha* (manioc flour) for the next day's meal. Some houses stand empty, closed down while the families who live in them work as seasonal wage laborers in the black pepper fields on the mainland. The screeching of sawblades echoes over the water as sawmills cut the island's dwindling supply of *virola* trees. These are all evidence of the crisis facing Paruru, which is the focus of this study.

Residents of Paruru share the broad outlines of Parker's (1985b) description of *caboclo* culture with many other communities in the Amazon. Their Amerindian heritage is evident in their faces and their diet, and their Portuguese ancestry in their language and religion. They live along the banks of a channel which forms part of the Tocantins River and make a living based primarily on fishing and the extraction of forest products.

Like many other residents of the Amazon, Paruru islanders organize their subsistence activities around the seasons. As Wagley (1976) points out, to the Amazonian inhabitant seasons are marked by the amount of rainfall rather than by variation of temperature. The period extending roughly between the months of January and June is the rainy or *inverno* (winter) season, while the

drier months between July and December form the *verão* (summer) season. The winter season, with its heavy rainfall, makes fishing difficult as the river waters swell and scatter fish over a wide area. Rubber tapping becomes impractical, as the rain dilutes the latex collecting in the containers. Summer, by contrast, is a time when fish are abundant and easily caught. *Açai* palms grow heavy with rich dark fruit; cacao trees bear their green oblong pods, and latex from rubber trees tapped at the break of dawn collects undisturbed until the next day's rounds.

Because Paruruenses live in the estuarine region of the Amazon basin, the land on which they live is flooded twice daily according to the ocean tides. Hence they cannot rely on horticulture to the extent that many other *caboclo* communities do. Instead they rely heavily on the fish and shrimp they can catch from the river which flows past their front door. Fish thus provide the main component of the daily diet; it also serves as a medium of exchange for the ever-important *farinha* (manioc flour) produced on the mainland, and for other goods such as coffee, sugar and kerosene.

Paruruenses organize their subsistence activities around the twice-daily fluctuation of the river tides, which rise and fall in accordance to the ocean tides some 150 kilometers downstream. In the winter, these daily tides bring schools of shrimp into channels and streams, where people can catch them with a variety of traps. The tides also reach far into the island forest, and as they recede, they bring out the ripe fruits of the *ucuuba* and the *andiroba* which

have fallen to the ground and which then float on the surface of the water for everyone to collect. When Paruru residents cut down trees to build a room or to sell to a *marreteiro* (middleman), they use the outgoing tide to float the logs out of the forest and into the main channel. Sometimes they will then lash the logs to the river bank and wait for the tide to flow past in the opposite direction, to carry them to their final destination.

In the summer, the tides affect the types of subsistence activities individual Paruru households may perform. On the lower side of the island, the *ilha baixa*, most of the land continues to be flooded every day. As a result, inhabitants of the low side are still limited to crops which tolerate high amounts of water. *Açai* thrives in this type of area; cacao trees seem to survive, as do rubber trees. However, any horticulture using the traditional *caboclo* crops of rice, beans and maize is virtually excluded, because there simply are not very many spots which do not become water-logged during at least part of the day.

On the high side of the island, the *ilha alta*, the *verão* tides do not completely cover all available land. Hence, residents of the high side have an increased opportunity to supplement their household diet and economy with horticultural crops. In addition to the *açai*, cacao and rubber, they can plant small quantities of squash, beans and vegetables. For those with a large enough area of land, they can even plant rice and manioc, at least enough for the household.

## Conceptual Framework

I have written this dissertation in the tradition of cultural materialism (see Harris 1979). This means that the logic that ties together the various ideas I present is based on a set of general assumptions about how best to understand social organization, as well as cultural and political change. As is evident by the organization of the various chapters, priority is given to the material conditions of life that characterize the community of people I have studied. In contrast to idealist research strategies (in which culture is the primary explanatory variable), my starting point for the collection and interpretation of data is how people interact with their environment in order to maintain themselves.

In the case of *caboclos* in Amazonia, the emphasis is on how people use water and land. The basic assumption is that the way that *caboclos* organize their households, the way they worship their saints, and the factors that motivate them to take political action can be understood by analyzing the economic activities that they perform. Furthermore, these activities are not stable and unchanging features of the local economy. To the contrary, the economic viability of different activities rises and falls in response to a wide range of factors that include: the depletion of the natural resources; changes in market prices; government subsidies; and the development policies that are carried out by the state (for example, the building of hydroelectric dams). The materialist line of reasoning further suggests that when these material

conditions change, then people change other aspects of their lives to adjust to the new circumstances. In this study I focus on the changes in household strategies for island caboclos' livelihood, changes in the kind of community cohesion, and changes in political responses.

The study addresses a number of specific empirical and theoretical issues that have concerned anthropologists and other social scientists. In keeping with the many studies of Amazonia carried out in the 1970s, a major objective is to document the individual and community-level effects of the development policies implemented by the Brazilian goverment. If most of the research along these lines has focused on small farmer colonists and *caboclos* in upland areas, my goal in this dissertation is to focus on riverine peoples. Despite the fact that such communities seem far-removed from the violence and turmoil that has characterized many frontier areas, I will show that many of the national-level economic and policy trends that have taken place in recent years have had an equally profound impact in these riverine places.

Central to such an approach is the problem of bridging different levels of analysis in order to situate my research site in the broader context of Brazil (Roseberry 1988, Schmink and Wood, forthcoming). I will show that many of the patterns and changes I have documented and measured in the field can be explained by referring to national and regional-level economic and policy issues. Thus, even though most of my data deals with one small community, other information gathered from secondary sources play a critical role in this

research.

Within the community, there are also differences that are analyzed in this study. At the community level, divisions along ecological lines are coming to have ever more socioeconomic importance. These divisions are evident in looking at changes in economic strategies at the level of households. Long (1984), Schmink (1979), Wood (1981) and others have demonstrated that households are often basic units that mediate the flow of labor and other resources. Contemporary research on this topic can trace its roots to the seminal work done by Chayanov (1966) who described the household as a dynamic unit of production that adjusts its strategies over time in response to the household's internal characteristics (for example, life cycle, size, consumption needs) and the demands of the external market.

## Methods

The research for this study is based on field research which I undertook between June 1988 and June 1989. During that time I lived with a family in the island community of Paruru, accompanied by my field assistant, Marilia Brasil. The field research focused on three groups: a) the community of Paruru and its members organized in households, b) local religious and political organizations and c) communities the length of the river downstream from the dam.

To collect the data, I used a combination of qualitative and ethnographic analysis complemented with quantitative analyis. The qualitative data come

from particpant-observation, oral histories and informal interviews with individuals both in the community of Paruru and other riverine communities.

The quantitative data are based on a questionnaire which I administered in a random sample of 43 households, or 80 percent of the community to obtain the sociodemographic and economic profile of the community. To obtain the sample, I mapped the entire community. My original intention was to administer the questionnaire in every household in the community. It was not possible to do so, because not everyone was at home during the period in which I administered the survey. However, the final sample of households is distributed evenly over the community; no section was ignored. I visited each household once, and applied a seven-page questionnaire which took approximately forty-five minutes to complete. For each household, I recorded basic socioeconomic data, such as housing materials and ownership of consumer and producer goods. For each individual within the household, I recorded demographic information (sex, age, relation to head of household, number of children born to each female over the age of 14). I also recorded information on each economic activity performed by every individual in the household. My field assistant and I took turns administering the questionnaire. While one asked the questions and recorded the answers on the form, the other recorded in a separate notebook any qualitative information which inevitably comes from asking people questions. The data from the survey questionnaire generated a three-level data set with information about a) each

household, b) each individual within the household, and c) each economic activity performed by the individual. I then used correlation and regression analysis to test key relationships among and between the three levels.

To understand the religious and political context of the community, I interviewed the leaders of key political and religious groups in Tucurui and Cametá, notably those in the Rural Workers' Union and the Catholic Church. To determine how representative Paruru's experiences were of the island region, I travelled the length of the river between its mouth and the Tucurui dam, where I conducted group interviews with members of the Catholic Church and the Rural Worker's Union about their communities' experiences with political mobilization.

I also needed to place the situation faced by islanders in a larger political and ecological context. To that end, I visited the Tucurui dam twice, touring the project and interviewing engineers. I interviewed icthiologists and other scientists at the Museu Paraense Emilio Goeldi of Belém, Pará state, and at the National Institute of Amazonian Research (INPA) of Manaus, Amazonas state. Finally, I searched archives for accounts of the political mobilization against the dam. Especially helpful were the archives of the Catholic Church in Cametá and Belém. The private library of Donald Sawyer in Belo Horizonte, Minas Gerais State, proved to be a rich source of publications about Amazonia in general.

## Structure and logic of the dissertation

The chapters in this dissertation are oriented to two levels of analysis: household and community. Chapters Two through Five present household-level data, based on both qualitative and quantitative methods of collection. Chapters Six and Seven present community-level data, based primarily on qualitative methods. Chapter Eight presents the conclusions.

Chapter Two describes the socioeconomic and ecological setting within which the community of Paruru is situated. This chapter demonstrates that community members as a whole share certain socioeconomic characteristics and make a living within certain ecological parameters of seasons and daily tides.

However, the community is not homogeneous. The island has a high side and a low side, defined by the daily tides: the low side floods with virtually every tide, while the high side floods only during the peak of the rainy season. This division based on ecological factors is accompanied by a division based on socioeconomic factors.

Chapter Three presents ethnographic data on how households in Paruru make a living at present. Like *caboclos* elsewhere in the Amazon, people perform specific activities according to the winter (dry season) and summer (rainy season). Although these activities are still based on the traditional extractive resources, people are finding it increasingly difficult to make a living.

Chapter Four explains why people in Paruru are experiencing difficulty in sustaining their families. Over the past twenty five years, the Brazilian government's policies to extract lumber, to increase production of cacao and rubber, and to intensify the commercialization of fish in the Amazon basin, have undermined the economic options for island communities such as Paruru. In particular, oils, lumber and fish are being depleted. The net result has been a decreased range of traditional local resources upon which islanders can rely to sustain their families.

Chapter Five examines the strategies families adopted in response to pressure on their resources. The data show that in response to the stress, households on the low side of the island use different strategies than households on the high side of the island. Households with fewer resources put more people to work in activities on the island, and are more likely to send members off the island to work in wage labor. Households with more resources more frequently hire wage labor compared to households with fewer resources. Finally, chapter five looks at how the strategies taken by households in response to pressure on their resources affected the well-being of households. Households that hire wage workers (a proxy for monetary resources) live in better quality houses. Members of households that deploy labor more intensely are also those that are more likely to have members who are ill.

These findings show that access to natural resources is a primary

determinant of the way in which households deploy labor and in the living standards of people in Paruru. We can see the process of change and incipient socioeconomic differentiation within the community.

Chapter Six moves from the household level to the community level of analysis. The most powerful symbol of the socioeconomic relationships in the community is the Festival of the Holy Spirit. Before 1985, the community celebrated its festival in May, at the end of winter. By that time in the season, people had collected large quantities of certain oleaginous fruits as they floated out of the forest on the surface of the water. They sold or exchanged these fruits in arrangements with local traders, and thus had the means to participate in the events surrounding the festival. As a consequence of the past two decades of exploitation of the timber species from which the fruits come, people can no longer count on collecting sufficient quantities for trade.

Since 1985, the community celebrates the festival in September, during the summer. The principal resource associated with this period is the fruit of the açai palm. The fruit traditionally has been collected only for the household's daily consumption. In recent years, people have begun to sell açai for cash in the market in the mainland town of Cametá, when they need money to buy food or to participate in an event such as the festival.

This change in the season of the celebration--and as a consequence a change in the resources and socioeconomic relations associated with the festival--supports what I have argued elsewhere in the dissertation. The

community is undergoing a fundamental change in its relationship to the environment. With the erosion of the resource base, there has been a change from selling traditional cash crops to selling traditional subsistence crops.

That the change in the month of the celebration took place one year after the floodgates of the Tucurui dam closed is indicative of the catalytic role the dam has played in the community. The dam served as a highly visible symbol for the community's gradual but inexorable loss of control over its resource base.

Chapter Seven documents the community's responses to the dam and all that it symbolizes. Paruruenses find that they cannot find solutions to their present situation solely within the community. They have chosen to seek alternative solutions outside of the community, particularly by joining other riverine communities in a political mobilization against the dam.

Chapter Eight, the concluding chapter, discusses the implications of the findings presented in the previous chapters. The indirect effects of recent government policies have begun to penetrate into seemingly stable and cohesive caboclo communities. These communities have limited possibilities of adapting to new pressures by using their traditional cultural repertoire. The fundamental process of social differentiation and incipient proletarianization underway is the root of the community's new-found political awareness.

# CHAPTER 2
# RIVERWORLD

As soon as you step off the boat in Cametá, stretching your cramped limbs after a short night wedged in a hammock between fellow passengers traveling from the capital city of Belém, you know you are at the edge of another world. Even in the pre-dawn darkness you can make out the shapes of dozens of smaller boats clustered around the pilings of numerous ports. To one side of the dock, behind the crowd of short, wiry, dark-haired people peering into your boat, looking for returning friends and relatives, you can see crates of canned goods and sacks of rice, cacao, and manioc flour stacked and waiting to be loaded for the trip further upstream. As you sit on a hard wooden bench and lean your head against the plank wall of a small dry-goods store on the dock to wait for your own friends, you can see evidence of this other world everywhere. It is in the well-muscled upper arms and backs of men and women as they reach for small plastic cups of steaming coffee dispensed out of a thermos at the dry-goods counter; it is in the ease with which stevedores and passengers alike climb in and out of the boat, unloading baskets and crates and children onto the dock. It is in the overheard conversations about tides and moon phases; it is in the beautiful, lonely sound

of a horn blowing as yet another boat announces its arrival. This other world is the world of rivers, where everyday reality is shaped by the rhythms and the resources of water.

Dawn breaks, and soon people who live on islands in the main channel of the river begin to arrive. Many share the sentiments of Sr. Vicente who, although a seasoned pilot, never likes to travel across the river at night from his island an hour and a half away. In the early gray light, one can spot the outline of his small, wooden, 10hp diesel-engined boat making its way towards the dock. It is Monday morning, and so his boat is filled with passengers, neighbors who have come to sell a basket of fruit, a sack of charcoal, or a few woven mats for a bit of cash. Several children, including two of his own daughters and a son, also come this morning, back to school in town after a weekend at home.

The tide is low this morning, so Sr. Vicente noses his boat through the pilings under the dock and ties up by the wooden steps, while his passengers busily prepare to face a morning in town. One woman runs a comb through her hair and passes it to her neighbor. Another puts a pair of shorts on her naked baby and counts the remaining ones in a small plastic bag to see if she will make it through the next few hours with enough fresh clothes for him. A couple of men pull on a pair of pants over their nylon shorts, and reach for shirts hung on nails to guard against wrinkling. The schoolchildren put on their black uniform shoes and search for notebooks and pencils among the

baskets filled with mangoes for sale in the market. A retired schoolteacher checks her tan, battered vinyl pocketbook for her pension papers so she can be sure to collect her check this morning. A man nervously fingers a carefully folded, water-stained piece of paper with a Belém telephone number he will call to learn of his wife's laboratory results. Sr. Vicente announces that he will be leaving at 11:00 o'clock, and several murmur in agreement.

All the passengers disembark, except for a young boy who will remain in the boat to watch over things. As they make their way from the dock to the market, they walk through a narrow passage between two dry-goods shops. The ever-present perfume of dried cacao and black pepper is particularly powerful here this morning. Large sacks of each are piled high just inside the merchants' doorways. Prices must be good right now.

A left turn onto the main street running parallel to the river puts people squarely in the center of the open market. Young boys squat beside small piles of palm fruits carefully arranged on the concrete. A thin, quiet man sits behind a low table covered with cheap plastic watches. Next to him, an old woman stands beside her wooden tray filled with long loaves of bread. A few yards beyond her, the official market begins, where merchants pay rent on their allotted slots. Four rows of stalls extend the length of the block. The first two rows are set aside for food and produce. Small charcoal burners smoke as women cook rice or manioc flour porridge, at the last minute adding dark purple *açaí* juice made from a palm fruit and then pouring the steaming

brew into bowl-shaped gourds. Other women fry fish, boil spaghetti, and stew tough meat with tomatoes and onions and ladle the food out onto chipped white plates. Next come the produce stalls. Some are well-stocked, crowded with braids of onions and garlic, piles of large brown potatoes, green peppers, faded apples, huge mangoes, and open sacks of beans and rice. Others fare less well, offering only a handful of wilted hot peppers, bruised tomatoes, and several stalks of bananas.

Running parallel to the produce stalls, the clothes stalls offer just about any kind of T-shirt imaginable, along with bottles of cheap nail polish, plastic sandals, and mass-produced embroidered dresses. One constantly has to duck to avoid colliding with the colorful masses of these items hung along the top edges of the stalls. Vendors here hustle their wares agressively, stepping out in front of the potential customer as he or she approaches the next stall.

In a small clearing at the end of the rows of stalls, men preside over little rickety wooden tables covered with dried alligator meat and *pirarucu* (*Arapaima gigas*), known as the Amazonian codfish. On the concrete of the street, in and around the tables, young boys tend to their handwoven baskets filled with *açaí* fruits. Next to them, old men place their kitchenware on widths of plastic, arranging the aluminum flatware, basins, pans and cups in careful patterns.

A sharp turn into an alleyway leads one into another small square, where young and old men sit by their beige-colored plastic, 60-kilogram bags

of manioc flour. These are the wholesalers, the people who bring the manioc flour they have produced from small patches of land scattered along the unpaved highway which runs roughly parallel to the river for seventy kilometers between Cametá and Tucurui highway. Several trucks and a passenger bus travel the length of the highway and will pick up passengers who flag them down. Times are often hard, however, and those who cannot afford the price of a ticket must transport their manioc flour to the market on the back of a bicycle, or even on their shoulders.

The streets and alleyways are crowded with people like Sr. Vicente's passengers, all trying to run as many errands as possible in the few hours before they must return to their boats and home to their island. Popular Brazilian music broadcast by a local radio station blares from loudspeakers attached to lightpoles along the first two streets, adding to the general confusion. Between 11:00 a.m. and 12:00 noon, the docks fill with people laden with purchases. Boats are tied up three and four deep, so that nearly everyone must climb down off the dock onto the roof of the nearest boat and wend a path across the decks and roofs of neighboring boats until they reach their own boat. People help each other along, passing small children and large parcels over to the next boat, with an ease borne of long practice.

Finally all of Sr. Vicente's passengers are safely installed in the boat. Sr. Vicente guides his boat through the maze of other boats with a long pole; his son Jeremias makes subtle adjustments in the boat's progress with well-placed

shoves against the bows of neighboring boats. On the occasions when the vessel gets stuck, passengers in other boats lend their own hands and feet to the effort to free the boat.

As soon as the boat is free and out in the main channel, Sr. Vicente gestures to his son Edson to crank the motor. The interior of the boat fills with the unmuffled noise of the engine, and the passengers settle back for a roughly ninety-minute trip.

The sun reflects in shimmering patterns off the water, and a brisk breeze blows through the boat. The vast expanses of sky and water seem to go on forever.

Arriving in Paruru

The scene changes as soon as Sr. Vicente pilots his boat across the final stretch of the main river channel and enters a gap in the trees hugging the banks of the island. The opening becomes a narrow, winding channel which is part of a dense network of waterways through the island. A traveler's route is determined by his or her type of transportation and planned length of trip. In a canoe one can take innumerable shortcuts along shallow streams overhung with lianas, while in a motorboat with its deeper hull, one is limited to the deeper, wider channels. Today Vicente has selected a route which is somewhat shorter, but also risky because it becomes very shallow when the tide goes out. However, right now the tide is incoming, so he needn't worry

about being stranded for several hours while he waits with his disgruntled passengers for the tide to rise again.

He wends his way through the channel, the throbbing of the boat's motor echoing through the trees and coming back out a half-beat later. His 14-year old son Edson is the throttle boy today. Edson knows this route nearly as well as his father, so he adjusts the speed of the engine at critical sharp turns without prompting. Since he is in the back of the boat, however, he cannot see the newly fallen tree jutting out into the stream, and so his father shouts an alert over the pounding noise of the motor. Edson leaps forward and slows the pace down to a crawl, as Vicente eases the vessel over the hazard. Although the passengers are all seasoned boat travelers, the event lends some drama to the day. All crane forward or lean over the sides of the boat to watch the progress. Some make a mental note to warn relatives whom they know will be traveling later that night over the same route.

Finally Vicente turns into the wide channel known as Rio Paruru, which cuts the island in half lengthwise. Immediately a cooling breeze floats through the boat. Here the water flows faster, feels fresher. The Paruru channel is a happy compromise between the vastness of the main river channel and the oppressiveness of the island channels. One can see the houses of friends and family strung along either bank. Young children in the houses recognize the particular sound of Vicente's boat, and lean out the windows to wave at their

aunts and cousins and grandparents. The passengers begin to collect their parcels.

Vicente eases up to his own house first. He steps gracefully along the floating buriti log which serves as a sidewalk and clambers up the ladder leading to the dock, carrying a newly filled canister of natural gas for the stove. His married son follows behind, with a plastic mesh tote bag bulging with other purchases. His younger son Edson pushes the boat away from the buriti log and points the boat towards the rest of the community, where he will deliver each passenger to his or her own dock.

## The Homogenous Community

At first glance Paruru looks like a fairly homogenous community. There is a pervasive feeling of continuity, as though people have lived here for a long time. Heads of households have lived in Paruru for a mean of 36.8 years, while their spouses have lived here for a mean of 28.9 years. Families have lived on their current property for a mean of 19.3 years, and most own that property.

Because of the daily fluctuation of the water according to the tides, houses are built up from the ground about five feet, and have a dock leading up to the front door. The docks usually consist of a series of boards, or palm trunks (*buriti* or *açai*) sawn in half, and placed across a frame; rarely are they nailed in place. At low tide, the dock is accessed by a ladder. The houses are

weathered a soft grayish brown by the frequent rains. One can see the water marks of previous winters' high waters on the outside walls, sometimes as high up as the window sill.

People use a narrow range of building materials for their houses, roofing them with purchased tiles or palm thatch, and constructing the walls with boards sawn from *andiroba* wood or *buriti* leaf petioles; the floors are made from andiroba boards or from palm logs sawn in half lengthwise.

At night, people light their houses with kerosene-burning *lamparinas* or, occasionally, with a gas lamp or diesel generator. They cook with wood- or coal-burning homemade stoves, or with purchased natural gas stoves.

Most people draw their drinking and cooking water directly from the river which flows past their front door, although a small handful of people bring piped water from Cametá. Some people filter the drinking water in clay filters, others strain it through several layers of cheesecloth, while still others boil it. Some even just drink it straight, with no treatment.

The yard around the house is usually between 1.5 and 2.0 hectares in size, and is filled with rich green vegetation. Graceful *açai* palm trees caress the sides of the house, growing especially thickly beside the kitchen where the fruits, soaked and rubbed clean of their rich maroon flesh, are thrown out the window three times a day. *Açai* is important here, and people's yards boast easily 700 of these palms packed into a small space. There may also be six or seven columnar *buriti* palm trees rising above the rest of the vegetation.

Scattered like jewels among the palms are ten or eleven fruit trees - the fuschia-fruited *jambo*, the velvety brown *ingá*, the peach and rose colored mango, the emerald green lime. A handful of tall *andiroba* and *virola* trees mix in with patches of shorter cacao trees. The smooth white bark of young rubber trees gleams whitely in the shadows. The older rubber trees present knobby, swollen trunks, from years of people tapping the bark with a small axe and collecting the latex in a snail shell affixed with clay.

One or two pigs root along the muddy riverbank for food, while up near the kitchen a half a dozen chickens pick at the meager table scraps thrown out the window. Two or three ducks paddle in front of the house.

## The Heterogenous Community

On closer examination, Paruru is not such a homogenous community. The sturdy wooden bench on Dona Celina's dock affords a view of most of the community. As visitors sip from glasses of deep orange-colored tapereba juice kept chilled in her kerosene refrigerator, they chat about the upcoming festival. Dona Celina's house is certainly the best house on the island, a two-story wooden structure set back on one of the highest pieces of land in Paruru. She has screened windows, a flush toilet, a television, and store-bought furniture in every room. At night, the lightposts outlining the front of the property along the riverbank are powered by a diesel generator. Dona Celina lives on what Paruru residents call the high side of the island.

By contrast, Marilda gestures with a wry grin at the bare floor of her front room, inviting her guests to seat themselves. After a period of polite conversation, she rises and prepares coffee over a charcoal fire in the kitchen, which is essentially a small lean-to attached to the back of the house. When she serves the hot brew, it quickly becomes clear that she has served the very last of her coffee. The drink is thin-tasting, the result of watering it down to stretch it out into three servings. She mentions her concern for her husband who is working in the pepper fields on the mainland behind Cametá. He has been ill with a bout of malaria and is too sick to even return home. Although she doesn't say so, his illness means that he won't have earned any wages recently to send her. Marilda's next glass of coffee, and the food for her five children, won't be easy to find. Marilda lives on the low side of the island.

The rise and fall of the river shapes the world in which residents of Paruru live. Daily tides flood the island according to the rhythms of the Atlantic Ocean tides some 150 kilometers distant. Since the island is not all one level, some portions of the land are completely covered with every tide, while other portions are covered only during the high waters of the rainy season. A channel splits the island roughly down the middle. Most of the land on one side of the channel is flooded every day, and is called by residents the low side of the island. Most of the land on the other side of the island is free from flooding during at least a portion of the year, and is called the high side of the

island. The ecological differences affect people's access to key resources upon which they rely and as a consequence, shape their sustenance strategies.

# CHAPTER 3
# HARVESTING WATER AND LAND

This chapter presents ethnographic data on how people in Paruru make a living. They organize their subsistence activities around the seasons, which in this part of the Amazon Basin are marked by the variation in the amount of rainfall. The winter (or rainy) season extends from January to June, and the summer (or dry) season lasts from July to December. Paruruenses take two factors related to seasonality into account when they organize the way in which they make a living. Certain resources can be exploited only during the season in which they become ready for harvest, as is the case with cacao and *açaí*. Others are exploited during the season which makes their exploitation most efficient. Such is the case with rubber, for example. The heavy rainfall of the winter season dilutes the latex collecting in the containers; hence, islanders tap rubber only during the dry months of the summer season. By contrast, timber is most easily extracted during the rainy season, because people can float out the logs on the high waters.

The following section describes the principal economic activities performed by people in Paruru. The first group of activities--extraction of oil from the fruit of the *andiroba* (*Carapa guianensis*) tree, collection of the fruits of

the *ucuuba* (*Virola surinamensis*) tree, shrimp trapping and timber extraction--are those performed during the winter season. The second group of activities--fishing, harvesting of the fruits of the açaí (*Euterpe oleracea*) palm, harvesting of cacao (*Theobroma cacao*), and tapping of rubber (*Hevea* sp.)--are those performed during the summer season.

## Winter Season

### *Andiroba*

Tia Maria stirs the *andiroba* fruits boiling in a huge pan over a wood fire. It took her a long time to collect the 200 kilograms of fruits. She remembers the days when one could collect 10 kilograms a day, just walking through the forest. Now the best she can hope for is 3 kilograms a day. Luckily two other women in the community pooled their fruits in a partnership arrangement they call *'de sociedade'* with her; otherwise, she wouldn't be able to make the *azeite* (oil) until much later in the season.

This batch will take two full days to cook. The rule of thumb is one day per 100 kilograms of fruit. Then she will let the fruits sit in a container undisturbed for 15 or 20 days before extracting the meat. When it is time, she will call her partners and they will work for many hours over the fruit, scooping the softened flesh out with special spoons.

They will leave the mounds in a basket or sieve for three to five days, and then place it in the sun for another three to five days. Finally they will fill

a *tipiti* with the *andiroba* meat and squeeze the oil out. It will take four days to do this. It takes two days to squeeze 100 kilograms of *andiroba*, producing 18 liters of oil which fills a large kerosene container.

The women will divide the oil among themselves, with Tia Maria keeping a bit more because she provided the cooking pans and *tipitis* plus more of the labor. They will be able to sell the oil for US$1.00 per liter, after 40 days of work.

Tia Maria thinks she probably won't make *andiroba* oil after this year. It is not an easy task, and most people don't begin to produce the oil by themselves until they are adults in their twenties. Tia Maria is old, 64 years old, and her rheumatism gives her trouble these days. Besides, the price one gets nowadays is not worth all the effort. She remembers the days when her mother made *azeite de andiroba*. Then, people collected several hundreds of kilos of the fruits and take them to her mother's house. Her mother boiled them in the huge pans made specially for this purpose. Then people would come in the evening, after they had finished the day's work, to scrape out the flesh. Tia Maria's mother would serve pot after pot of hot coffee, and provide coils of strong black tobacco for men to make cigarettes and women to smoke in their small wooden pipes. It was a time for storytelling and joking.

Now, however, the amount of time it takes to produce one liter of the *azeite* is not worth the price one gets at the market. Only a handful of women

make it any more; they know there will always be a small demand for it locally for medicinal purposes, and so will be able to earn a small sum of cash.

*Ucuuba*

Across the channel from Tia Maria, Dona Rosa glances out the window as four of her young grandsons tie their canoe to her dock. It is eleven o'clock on a February morning, and the children have just finished their classes for the day at the county-run school across the channel.

The children are excited, because they have filled the bottom of the canoe with small oval *ucuuba* fruits. The bright red arils around the fruits add a cheerful dash of color to the bottom of the water-aged canoe. The fruits drop off the trees during the winter months and are carried out into the channels with the tides.

Each of Rosa's grandchildren carries a small cone-shaped basket woven of *guarumã* leaves and attached to a short stick. Every time they set out in their canoe on an errand or to school, they keep a sharp eye out for the fruits floating on the surface of the water. Most mornings, the air is filled with splashes and giggles as the children join their peers in the competition to see who can amass the most in one trip.

The children put the fruits in a basket, and when the basket is full, Dona Rosa will take it across the channel to Geraldo, the owner of a *taberna*

(small, dry-goods store). He will then either pay her cash or advance her credit against items she needs from his stock.

Dona Rosa remembers that when she was a child, each family constructed a trap out of a *buriti* log, so that the *ucuuba* fruits would collect against it as the tide receded. There were plenty of the fruits, so that everyone could take basketsful to the local small merchant to exchange for goods at his store. It was an important part of people's winter livelihood, not just a children's game.

Shrimp

The tide is rising this morning as Dona Rosa's son-in-law Vicente sets out for an *igarapé* (stream) on his back property. On his last trip to his cacao plots he noticed some shrimp skirting the banks of the stream, which means that shrimp are starting to make their winter appearance.

Vicente collects the *paris* (homemade panels) which are stored in the remains of an old house of his near the *igarapé.* He places them on the bank while he drives five-foot stakes into the mud of the stream bed. The stakes form a key-hole shaped pattern, so that the "arms" extend across the stream to each bank. They face the direction of the incoming tide. Then Vicente lashes the *paris* to the stakes.

About four hours later, the tide has receded completely. Vicente sees that some shrimp are indeed caught in the trap. He first dismantles all the

*paris* and stakes except the heart-shaped one where the shrimp are. Then he carefully opens it and throws them in handfuls into a basket. He will take these home where his eldest daughter Elza will boil them in salt water. Then she will place them back in the *basket* and hang it on a hook out of the way of the cats and rats. The family will snack on them throughout the day, and eat them with their *açaí* tonight.

Even though he has provided his family with the evening meal, he is discouraged. Today he barely fills a third of the basket. Before the dam, he could have easily filled two of these baskets with the same trap, and had shrimp left over. This stream used to be famous for its abundance of shrimp. He used to invite several friends and relatives to trap together. They always caught enough to feed several households. Now the shrimp are scarce and small.

Wood Extraction

Carlos's sawmill sits in a clearing at the edge of the river. The main building is simple, just a rough log frame covered with palm thatch and set into ground thick with pale gold sawdust. Four men saw logs into boards, placing one log a time on the *carro de transmissão*. A ten-horsepower Yanmar diesel engine powers a 40-inch circular saw via an eight-meter fan belt.

Carlos is proud of his sawmill, which he set up in 1988. His is one of fourteen on the island, popularly known as *rabo de foguete*, or "firecracker's

tail", because they are small-scale and commonly experience only a relatively brief period of high productivity. It took Carlos several years to set up the mill. At first, he and his three sons rented equipment and cut and sawed the trees off their own land. They took out enough money to feed themselves and their families, and channeled the rest into the equipment. Carlos recalls that he chose to save the money and build up the sawmill slowly, rather than risk taking out a bank loan with its high interest rates.

The sawmill operates year round, but not every day. In the winter, Carlos and his sons cut down trees bought from people on Paruru and nearby islands, and float them out on the water. As Carlos says, *"o nosso carro é a água e facilita tirar do mato"* (our car is the water, which helps us take [the logs] out of the forest). They tie 250-300 *toras* (boles) together into a *jangada* (raft) and float them to the mill. If the logs come from fairly close by, Carlos need only assign one of his sons to sit on the raft and float it on the appropriate tide. Other times, he or a son may attach a slightly smaller raft of logs to the back of a canoe, and pilot it that way. If the trees come from an island further away, he sends a motorboat to pull the raft. He prefers not to use his motorboat very often for this purpose, because it costs him extra diesel fuel. Furthermore, since he has only the one motor to power both his circular saw and his boat, he must temporarily shut down the mill when he uses the boat.

If the prices are good, Carlos and his sons saw the logs right away into boards and ship them to Belém via a *marreteiro* (middleman) with whom they

have a verbal agreement. The window of opportunity is small, however; by February much of the urban construction ceases because of the heavy rainfall characteristic of the *inverno*. The price for boards plummets, and operators such as Carlos who live a fair distance from Belém risk not breaking even after they pay the diesel fuel and crew wages and food to transport the boards.

Carlos and his sons stockpile between 2,000 and 3,000 *andiroba* and *virola* logs in the *igarapé* near the sawmill until the dry, or summer, season. They saw most of the logs between the months of July and February. The most common wood they use is the *virola*, which they process into 18" x 1" boards for use as scaffolding. *Andiroba* can be made into a wider variety of products, including boards, slats, rafters and beams. These days, no-one has timber of first quality to sell; to qualify for that category, the bole must measure 5,2 meters in length. When it is available, the current price is $US15.00 per cubic meter. However, the majority of trees in this group have already been logged out of the area around Paruru. Nowadays, people sell the remaining shorter and thinner logs, bring a price of US$3.00 per cubic meter.

In one day's labor of two four-hour shifts, Carlos and his three sons can saw 12 cubic meters of wood, to produce one of the following:

| Species | Product | Unit | Dimensions | Price/Dozen |
|---|---|---|---|---|
| *Virola* | boards | 40 dz | 18" x 1" | US$ 1.30 |
| *Andiroba* | boards | 20 dz | 18" x 1" | US$ 1.30 |
| | *pernamancas** | 25 dz | 11/2" x 3" | US$ 3.50 |
| | *frechais* * | 20 dz | 1.5" x 3" | US$ 4.00 |
| | *ripas* * | 40 dz | 3/4" x 2" | US$ 1.50 |

* various products used in construction for which there are no precise English translations.

Carlos' wife and daughters-in-law make charcoal from the *andiroba* scraps; the *virola* scraps are either burned or left out in the open air to rot.

Like most sawmill owners in the community of Paruru and others on the island, Carlos' workers are relatives; in his case all four are his sons. Now that the sawmill is fully equipped, each son is paid a daily wage and provided with a mid-morning snack and a hot lunch. The tasks form a hierarchy of responsibility. The most important job is that of the *serrador*, or sawyer; then there is the *cabeçoteiro*, who unloads the boards and removes the scraps. The other two workers are helpers who guide the carriage along the tracks.

Carlos is gloomy about the future of sawmills on the island. He remembers how the islands used to be twenty years ago, before the serious wood cutting began: "Tinha lugar aqui que se via madeira como se vê açaí."

(There were places around here that one saw wood growing as thickly as açaí does.) Now, however, he says there are only three or four years' worth of wood in the near vicinity; after that, people will have to travel to islands further upstream, nearer the Tucurui dam, to find wood.

## Summer Season

### Fish

It is late September and José sits in his battered canoe in a channel just in front of his brother's house. It is high noon, he has been out here for three hours, and still he has not caught any fish. All week, José has spent the better part of every day and some of each night trying to catch fish to feed his family. Most of the time, he catches one or two, just enough to take the edge off the children's hunger. His wife usually prepares the fish in a watery broth. Each person is given a small piece of fish with plenty of the broth. Then they pour a handful of *farinha* onto the plate, where it soaks up the liquid and swells into a filling mass.

It hasn't always been so difficult to catch fish. Even though José is young, only twenty five years old, he remembers eating his fill of fish at every meal during the summer months. People caught fish in a variety of ways and in several different types of environments. The *tarrafa*, a type of cast net, was a good tool to use on the Paruru river channel. One could either stand out in

the water and cast it, or work from a canoe. Two men worked together in the one paddling, and the other throwing the net.

Children and women often caught fish with a fishing pole. José remembers spending many afternoons as a child playing with his brothers and a cousin or two, throwing their lines into the small stream running behind his house. They usually caught at least a couple of small fish. They would build a small fire on the ground nearby and roast the fish for a snack. He also remembers that when his father was away for a brief period, his mother would sit out on the dock with her fishing pole to catch fish for dinner. She was always successful.

Sometimes his father used a trotline, made of a series of heavy-duty fish hooks knotted along a length of cotton twine. He tied one end of the trotline to a stump on the river bank, and attached the other end to a stationary object some distance away.

José's favorite way to catch fish was with a fish weir called a *cacuri*. It was done with several *paris*, which are panels made of lengths of split bamboo woven together with vines. At low tide, he helped his father and his uncle, who lived next door, sink tall stakes into the mud some ten meters parallel to the river bank and curving in towards dry land at either end to form an elongated "C". The three of them then unrolled each *pari* and lashed them to the stakes with vines.

Over the next five or six hours, the tide would rise, bringing schools of fish with it; as the tide began to recede, José, his father, and uncle would paddle into the weir and scoop the fish into the bottom of the canoe. The next few days would be consumed with the salting and drying of the fish. There were always plenty of fish to give away to friends and relatives.

These days, José sees very few *cacuris* strung along the river banks. Just last week, his neighbor Vicente set one up in front of his house, along with his brother-in-law Jaime. The two of them worked for two hours late one afternoon to install it. Then they had to get up in the middle of the night, when the tide was flowing out, to intercept the fish. For their trouble, they caught six small fish, which they divided between the two households. José bet that lunchtime the next day in the Vicente household consisted of the familiar watery fish broth thickened with *farinha*. Even better-off families like Vicente's knew some hunger these days.

*Açaí*

Late on Sunday afternoon, Vicente calls to two of his young sons and a teenage daughter to help him collect *açaí* for tomorrow's trip into town. It is September, and most of his trees are in fruit. These days his family eats their fill of thick, fresh *vinho de açaí* (a thick drink made out from the palm's fruits) three times a day and there is still plenty of fruit left to sell in town for some cash.

The four set out by canoe across the channel to one of Vicente's properties on the low side of the island. They only come over here twice a week to collect *açaí* for sale. There are plenty of *açaí* trees near the house to harvest for daily consumption.

Once on shore, Vicente's sons each choose a tree to climb. Holding a machete in one hand, they slip their feet into slings made of strong leaves, and climb up about eight feet on the slender, smooth trunk to the inflorescence which bears the small, purple fruit. They slice off the inflorescence with one stroke of the machete, and slide down the trunk with the prize in hand.

The boys move on to other trees, each time placing the inflorescence in the pile near their sister Lúcia and their father. Lúcia and Vicente sit on the ground surrounded by large baskets into which they strip the clusters of fruit. It takes the fruit of between four and six inflorescences to fill one of these baskets. Each basket, or *rasa*, is equal to about 18 liters.

A few hundred yards away, Vicente's married son Jeremias harvests *açaí* too. Vicente has let Jeremias collect and sell the *açaí* from a small piece of land and keep the proceeds. Jeremias wants to plant rice on a small piece of land his wife recently inherited and needs some cash to tide his family over while he spends time in the field readying the land for the rice.

Vicente will make a good sum from his *açaí* trees this year. He has several thousand trees, spread out over four pieces of property. Each tree will, over the summer, produce six to eight inflorescences. On one piece of

property, where his trees seem to thrive, he will harvest ten or twelve inflorescences per tree over the harvest period.

When Vicente sets out for Cametá before dawn on Monday morning, the rear third of his motorboat is filled with his baskets of *açaí*. Each passenger he picks up on his route through the channel also has *açaí* for sale. Some of them are not as fortunate as Vicente is. They have only the *açaí* trees which surround their houses. However, they are strapped for cash, and so must sell the *açaí* they would normally consume that week at home.

When they arrive at the dock in Cametá, each passenger selling *açaí* will carry the rasas to the area of the market designated the *feira do açaí*. They will join the dozens of other islanders who also are trying to obtain a little cash.

Vicente and his neighbors haven't always sold *açaí* in Cametá. Most recall beginning to do this after 1984, when the floodgates of the Tucurui dam closed. They notice that the supply of *açaí* seems to be steadily decreasing. Trees don't seem to produce as many fruits as they used to. In addition, the fruits which do appear, dry up on the tree before they are fully ripe.

Cacao

Vicente's wife Rosa cleans the six kilograms of the fish known as *mapará* she bought this morning from the *marreteiro*, a man who buys fish from several suppliers and sells them in nearby communities. Her seventeen-year old daughter Zuleide is washing the noon meal dishes and pots and pans on the

platform attached to the back of the house. Zuleide draws water for the washing with a plastic bucket attached to a length of blue nylon rope, from the little stream which runs behind the house and under the platform. Today she is paying special attention to the aluminum pots, polishing them with steel wool pads. She wants them to look extra shiny for later this afternoon her aunt, Rosa's sister, will arrive with her family from Belém for a visit.

As soon as Rosa and Zuleide finish their tasks, they each pick up machetes from the corner behind the gas stove, and cross the backyard stream to join Vicente and the boys in the cacao plot. Lúcia, the nineteen-year old daughter, will stay behind and prepare the evening meal for their guests. She is the best and most imaginative cook in the family, and takes on the responsibility with pleasure when she is home on weekends and vacations from school in town.

After about a ten-minute walk, Rosa and Zuleide come upon the boys sitting around a two-foot high pile of yellow and green cacao fruits already picked by Vicente and the boys. Fourteen-year old Edson and eleven-year old Nelson are splitting the fruits open with machetes, and handing them to eight-year old Paulo. Paulo strips the seeds out of the pods, sometimes popping a few of them in his mouth to suck the acid-sweet white flesh before dropping them into the basket at his side.

When Rosa and Zuleide arrive, the work proceeds at a quicker pace. It is a hot afternoon, but pleasant to sit in the shade of the cacao trees. The

youngest son Toninho hears his mother's voice and comes running to hug her. He is torn between helping his mother and helping his father several hundred yards away, so he alternates between the two. He collects as many cacao pods as his five-year old arms can carry, and drops them at his mother's side.

In about three hours all the ripe cacao has been collected. Vicente has made the rounds of his plots and is satisfied with the minor pruning and weeding he did. In three months, when this harvest is done, he will hire four workers to thoroughly weed all his plots. The whole family starts home together, carrying the baskets full of fragrant cacao seeds.

The trip back proceeds at a leisurely pace. Members of the family stop at intervals, where they had noticed a ripening fruit of one kind or another during their walk to the cacao plot. By the time they arrive home, their arms are laden with papaya, *cupuaçú*, and bananas.

At home, everyone heads for the water for a cooling bath. The boys and Vicente bathe in the river at the front of the house, wearing the nylon shorts they put on this morning. Rosa and Zuleide prefer to bathe in the creek behind the house where it is quieter and more private. Even so, they bathe fully dressed, wearing the clothes they have worked in all day.

Soon everyone is freshly scrubbed and anxiously awaiting their guests' arrival. When Justina and her family arrive, everyone talks at once. Justina lives in Belém with her merchant husband, and does well financially. She still

returns to Paruru at least once a year to visit her brothers and sisters and mother.

Everyone gravitates back to the kitchen. Immediately the papaya are cut open and consumed, the cupuaçú flesh is made into a drink, and the bananas are promised as a gift to Justina. Since this is a special occasion, the adults decide to extract the juice from the cacao seeds from today's harvest. Justina and Rosa fill the *tipiti* with seeds, and Vicente hooks the top loop over a beam. Justina then inserts a length of wood through the bottom loop of the *tipiti;* together with her teenage son, she exerts pressure on the bottom loop. The juice oozes out into an aluminum basin placed below the *tipiti.*

When all the juice is squeezed out of a particular batch of seeds, the seeds are dumped back into the baskets. The *tipiti* is then filled with fresh seeds, and the process continues until all the seeds have been squeezed. The juice is poured into a large aluminum pan with some water and sugar. Everyone dips out glasses of this refreshing drink. The men spike theirs with some *cachaça* (crude rum), and settle down to catch up on the news.

The seeds are left in the baskets to ferment for three days. After that they will be spread out to dry for three or four days on *tupés* (mats) in the sun. Vicente will then store them in a gunny sack for a few weeks, until he has accumulated enough to sell to one of the merchants in Cametá. He always sells his to one merchant in particular.

Rubber

Benedita rises before dawn on a Friday morning and prepares some coffee. She drinks it down and sets out on her rubber tapping rounds, leaving her newborn baby and six other children still asleep in their hammocks. She carries her *uruá* shells (from a type of snail), her *machadinho* (axe), and a 30 kilogram container of river clay.

When she arrives at the first rubber tree, she strikes a firm blow on the trunk with her axe. She attaches an *uruá* shell the size of a cupped hand to the bark, just below where the white latex begins to trickle out, affixing the shell with a dab of the clay. She attaches six more shells around the trunk in an ascending semi-spiral pattern, and moves on to the next tree.

Tomorrow she will collect all the shells from all the trees she has tapped every day this week. She will remove the coagulated latex "bricks" and store them until they have dried out some. She will tie them into balls and take one third of the total to Jovico, the local small merchant who supplies her with her 1500 *uruá* shells each tapping season.

This month and next, she is tapping the rubber on her *compadre* Vicente's property, and he doesn't charge her for access to the trees. When the latex stops flowing here, she will move on to her *comadre* Alice's trees, and then to Jaime's. When she taps the rubber on their properties, they charge her one third of her rubber. In the old days people usually charged half of the total collection. Everyone is on hard times now, and those who own rubber

trees know that people who tap rubber need the cash badly. Nearly everyone has reduced their access fee to one third of the total harvest.

Even so, Benedita nets precious little for all her efforts. The first month she taps Vicente's trees, she collects about 15 kilograms of rubber per week, for a total of 60 kilograms that month. The next month the flow of latex decreases quickly, from 15 kilos a week to seven and then to three kilos. She figures that the second month she collects a total of about 30 kilos of rubber.

The ethnographic description of the economic activities presented in this chapter presents in greater detail how people in Paruru make a living. Although they still exploit traditional resources, they are finding that some of the resources no longer support them as well as they have in the past. *Andiroba* oil and *ucuuba* fruits are scarce and no longer bring the prices they used to command. Shrimp rarely appear in the channels and streams of the island anymore, and when they do, they are few in number. Timber supplies are dwindling, and most fish have disappeared from the river. Rubber no longer commands the price it once did. People are beginning to have to sell the fruits of the *açaí* palm, which is traditionally used only for subsistence.

The present state of affairs in Paruru has its roots in the larger political and economic context of the country. Chapter Four examines the history of this context.

# CHAPTER 4
# THE TIDES OF CHANGE

Members of the community of Paruru live much according to the daily routines carried out by Tia Maria, Dona Rosa, Jose, Vicente, Dalva and Raimunda, and share the dilemmas they encounter. All speak as with one voice about their present situation. Never before, they say, have they known such hunger nor found it so difficult to put food on the table.

We can find an explanation for islanders' current situation by examining their own accounts of changing resource uses, along with published data documenting key shifts in local, regional or national policies regarding these resources.

We learn that *andiroba* and *ucuuba* trees and their fruits, cacao, rubber, *açai* and fish each have a particular history of use in the islands. These specific histories do not unfold in isolation one from another, but rather interweave, so that a shift in the direction of one history affects the others.

## *Virola* and *Andiroba*

The period between 1970 and 1984 seems to have been a time of important change in the degree of pressure on island resources, beginning with the *virola* trees. Until the early 1970s, the fruits of the *virola* (known as *ucuuba* fruits) were important in the oils and fats industries in Brazil. In the Amazon, *ucuuba* fruits were used for

fuel and candles by *caboclos* and Indians. In Pará state they were also used for brickmaking and soap. The soap was considered to be far superior to other types.

In the 1940s and 1950s, *ucuuba* oil was second only to *babassú* (*Orbignya martiana*) in use for soap. It was commercialized within the state of Pará, southern Brazil, and the international market. The oil was also used in margarine, cosmetics and perfume, because of its *Tristimina*, which is available only in ucuuba and nutmeg (*Myristica fragrans*). The oil was so important that it was against the law to cut down *virola* trees.

By 1975, the demand for *ucuuba* fruits began to be replaced by a rapidly-growing demand for the wood of the *virola* tree itself. Between 1975 and 1980, the state of Pará came to account for a major portion of the national timber market. While on *terra firme* the principal timber species for export was mahogany (*Swietenia* spp.), on the islands the *Virola* spp. came to be highly valued for veneer and particle board.

Paruruenses responded to the changing market demands by beginning to sell their *virola* trees instead of the *ucuuba* fruits. During the mid to late 1970s, boats representing large-scale logging firms plied the channels of the Tocantins River, buying wood of first and second quality from islanders.

In 1988, there were fourteen sawmills on the island of Paruru, four of which were in the community of Paruru itself (see Fig. 2). Many of the sawmills had been installed beginning in the late 1970s. During those first years, the *andiroba* and *virola* Paruruenses cut was of first quality; by 1988 all that was left were trees of third

quality. These local sawmills produced boards and other products, primarily for the construction market in Belém.

The once-abundant supply of *andiroba* and *ucuuba* fruits which had formerly sustained the community during the winter season was exhausted as a consequence of the rapid depletion of wood stocks on the island. One small-scale merchant in 1988 recounted that when his own father ran the business in the 1950s he took in thirty to forty tons of *andiroba* fruits from clients every winter. These days, the son never takes in more than 500 kilograms per season.

Other members of the community lend support to this merchant's statement. In 1988, eighteen persons reported having stopped collecting *ucuuba* fruits in the past. Of these, thirteen (72 percent) stopped between 1970 and 1988. Of the eighteen who had stopped, nine (50 percent) listed 'resource exhaustion' as the reason for stopping. People also stopped collecting *andiroba* fruits. Of the fifteen who reported stopping, nearly half did so because of 'market prices' and 'resource exhaustion'. As with *ucuuba* fruits, the principal period during which people stopped was between 1970 and 1988, accounting for eleven people (72 percent).

## Rubber

If the history of lumber is one of recent and intense commercialization, the histories of rubber and cacao follow a different trajectory. Parurenses have long produced these two of Amazonia's most researched and subsidized products. Yet they have not benefitted from the knowledge and support extended to mainland

producers. In part, this is because they produce the two commodities in a manner completely at variance with the accepted techniques, and hence do not qualify as producers. They are, instead, mere "collectors", or "extractors".

Although rubber has been one of the most subsidized products of the Amazon region, virtually none of the benefits or incentives have reached island communities such as Paruru. There are two reasons for this.

During this century, the Brazilian government has invested vast amounts of time and money addressing the pest and production problems characteristic of the *Hevea* species. Although rubber yields fall far short of what many feel is a level competitive on the international market, the fact still remains that researchers have learned a tremendous amount about how to increase the flow of latex.

None of the information has benefitted island rubber production because all research has been geared towards *Hevea* cultivated in plantations. Islanders produce their rubber from 'wild' rubber trees, which are considered to have unacceptably low yields.

Secondly, islanders tap their rubber differently than do other Amazonians. Elsewhere, people collect the latex by cutting a series of slashes in the bark, collecting the latex in small cups, and then smoking it. The most recent government program requires that tappers further process the rubber into sheets before selling them.

In islands such as Paruru, people use entirely different techniques and tools. For each tapping, they strike a crisp blow on seven or eight places on the trunk with a small axe. Using clay from the riverbed, they affix a snail shell about the size of a

woman's hand under each of the openings in the bark. They collect the biscuit-shaped masses of coagulated latex over a period of a few weeks, and then take the balls to a merchant. They never smoke the latex, nor do they process it into sheets.

Over the past twenty years, rubber seems to have become a decreasingly rewarding activity. Eleven people have stopped tapping rubber, citing market prices and personal reasons for quitting. Of these, five (45.5 percent) quit between 1970 and 1980, and five (45.5 percent) quit between 1981 and 1988.

## Cacao

At the turn of the century the Brazilian government directed incentives to the production of the coastal states of Bahia and Espirito Santo. Researchers developed a hybrid which was well-suited to the higher elevations of Bahia, and soon plantation-grown cacao became a highly-profitable enterprise.

Beginning in the mid-1970s, the government established guidelines to encourage cacao production in the Amazon. However, CEPLAC will only provide credit, seedlings and technical assistance to those who agree to cultivate cacao according to their system.

Paruru islanders do not qualify, because from the CEPLAC perspective, they extract wild cacao. Their trees are old (some islanders say they belonged to their great-grandfathers). Until 1984, they could rely on the annual fluvial sediments for nutrients. The system required very little in terms of input, yet produced enough cacao to meet the requirements of islanders. The most problematic part of the

CEPLAC system, from the point of view of Paruru islanders, is the practice of clean clearing a plot of land and planting only cacao on it.

In the islands, only a bare handful of people have enough land to plant this way. Many useful trees grow interspersed with cacao trees in Paruru, including rubber trees, trees suitable for timber, and wild fruit trees. If Paruruenses were to clean clear their plots, they would in effect destroy their larder. The household would be left with nothing with which to make a living during the three years it takes for the first fruit to appear. Furthermore, the household would no longer have a cushion to rely on should the cacao crop fail.

Since the floodgates of the Tucurui dam closed in 1984, Paruru islanders have encountered a new problem. Their cacao trees look sickly, with drooping yellowed canopies, and produce very few fruits[1]. Raimundo, one of the three principal cacao cultivators on the island, concluded that they were suffering from a lack of nutrients, and so performed a small experiment. He selected two plots of cacao trees of the same age, treating one plot as he usually did with an occasional pruning and weeding. In the other plot, he piled the pruning and weeding litter around the base of the trees, and raked other leaf litter around as well.

He found that production in the first plot continued to decline; the canopies drooped, the leaves turned light green and yellow, and the leaves and fruit were more vulnerable to pests. The second plot, by contrast, began to thrive. The fruits were vigorous, and resistant to pests. Now Raimundo hires four workers twice a year to carefully weed (*roçar*) all of the land where he has cacao trees, and to pile the

litter around the base of each tree. He admits that he is an exceptional case in Paruru, because he has been able to afford the new method. It is highly labor intensive and requires either many family members or enough supplies of cash and food to pay day workers. Raimundo has cash because he has several crops which produce enough surplus. In addition, he has some money saved from when he worked in the *garimpo* (gold mining) at Serra Pelada in 1985 and 1986.

Thus Paruru islanders suffer a double blow when it comes to cacao. They have historically been overlooked by the government in terms of technical assistance. Now to produce what cacao they do have, requires a shift in cultivation practices which few households can muster either in terms of labor or capital.

It would seem that over the long-term, people might be helped to change their system of cultivating cacao, given the appropriate financial and technical support. After all, cacao lends itself extremely well to agroforestry systems, growing in association with other important food and cash crops.

However, the problem of cacao cultivation touches directly upon a much more basic dilemma. That is, cacao competes for space with the most important of all island crops, the *açai* palm. If islanders wish to increase cacao production according to CEPLAC standards, they will in nearly every case be required to remove some or all of their *açai* palms, because their plots of land are so small.

*Açai* is the staff of life to islanders. Paruruenses do not consider a meal complete without *açai*. Only those with 'surplus' land, beyond that necessary for *açai*

production, can consider changing their cacao cultivation practices to increase production. And that is a problem which has no solution.

As we have seen in this chapter, over the past two decades Paruruenses have witnessed, and participated in, the steady depletion of their key resources. People can no longer rely on fish or *ucuuba*. They remain invisible to government and academic institutions which might help them increase their production of rubber and cacao.

## *Açai*

As a consequence of this depletion, islanders are forced to search for alternatives to sustain their households. Since 1984, even the precious *açaí* palm has been assigned a new role in islanders' production system. Many households now sell part or all of their *açaí* fruits for cash in the Cametá market instead of consuming them at home.

Another factor has contributed to the changing role of *açaí* for islanders: the commercialization of *açaí* fruits and heart (*palmito*) for the Belém market. The islands (Marajó in particular) nearest Belém have traditionally supplied the urban demand for *açaí* fruits (Pace 1987).

Beginning in the mid-1970s, these same islands became the site of an aggressive commercialization of the *palmito* for export to the U.S., France and Japan. These islands are not able to fully supply both demands, and so the *'açaí* belt' which comprises the supplier islands expands outwards accordingly.

Residents of some islands between Paruru and Belém note that they are experiencing severe difficulties because members of the local elite of Cametá and other mainland towns have cut down virtually every *açaí* palm in sight for the *palmito.*

The community of Paruru is not so severely affected by the demand for *palmito*--yet. At the moment, people sell *palmito* throughout the winter when they need cash for food. During my period of fieldwork, some residents noted that they would probably have to cut down more *açaí* palms than they should, and hence seriously jeopardize their summer harvests of the fruit. However, the time will soon come when the *palmito* factories will travel even further afield to supply the export market, and Paruru will become one more supplier island, until its stands of the palm are gone.

## Fish

In the case of Paruru, the history of fishing has carried more weight than the history of any other resource in affecting the course of events over the past twenty years. The catalyst for the process was the *Decreto-Lei* number 221, signed on 28 February 1967, which extended fiscal incentives to commercial fishing enterprises. Over the next decade, Brazilian fishing companies based in the center-south joined multinational companies in intensive export fishing in the Amazon river basin. The fish species known in Portuguese as the *piramutaba* and *dourada* (belonging to the *Brachyplatostoma* genus), were destined for the U.S. and European markets (de Mello 1984a, 1984b) [2].

Commercial *piramutaba* fishermen located in the estuarine region, which includes the mouth of the Tocantins River, won a major concession from the goverment in 1976 with the expansion of the area within which they could ply their nets (Loureiro 1985). Local stocks of fish were further depleted because of the wider area of exploitation by these boats, equipped as they were with nets which caught all fish indiscriminately.

During this same period (mid-1970s), construction began on the Tucurui hydroelectric dam 300 kilometers upstream from Belém. As workers migrated to the small town of Tucurui, the population of the town increased significantly, with a concomittant increase in the consumption of fish.

When islanders realized that fish supplies would continue to decrease, they turned to a new technology themselves. They began to use small-gauge *malhadeiras* (gill nets) to catch the smaller fish still left in the river. In the process, they helped accelerate the depletion of the most basic component of their diet and their economy.

Over the past twenty five years, the Brazilian government's policies to extract lumber, to increase the production of cacao and rubber, and to intensify the commercialization of fish in the Amazon basin, have undermined the economic options for island communities such as Paruru.

This chapter examines what has happened to *andiroba*, *ucuuba* trees and their fruits, cacao, rubber, *açaí*, and fish. In each case, there is a general pattern. That is, at different times, in accordance with external demands, commercial concerns come through the island region and take what will sell on the local and international

market. In the process, the resource is reduced. In order to catch or harvest what is left of the resource, local residents adopt predatory technology or harvesting patterns. Thus, for example, after the logging firms bought the best of the wood, residents set up local sawmills to cut the remaining wood. After commercial fishing boats took what they could with dragnets, islanders began to use small-gauge cast nets. The overall effect has been to reduce the size and variety of the resource base on which the islanders depend for sustenance.

## Notes

[1] Paruru residents explain this by noting that before the dam, "vitamins" were deposited every year in a layer of new soil during the high waters of winter. Since the dam gates closed, all the "vitamins" have been trapped behind the gates.

To date, no data are publicly available about sediments in the Tocantins River after the closing of the dam. Studies of other dams demonstrate that sediments do indeed become trapped behind dam floodgates. Before the Aswan Dam was built on the Nile River, for example, the delta received 100 tons of silt per hctare per year. After the dam, only a few tons of silt are deposited annually in delta (Goldsmith and Hildyard 1984).

There is also evidence that the sediments in rivers provide important sources of nutrients for crops. Before the damming of the Amu Daria River in the Soviet Union, the 40 tons of silt per hectare deposited annually by the river provided 250 kilograms of humus, 200 kilograms of nitrogen, 50 kilograms of available potassium oxide, and 50 kilograms of phosphoric oxide per hectare (Goldsmith and Hildyard 1984).

[2] There is a significant body of literature which deals with the events leading up to and following the government's incentives for increased commercialization of fishing in the estuary. See, for example, Brabo (1981), Furtado (1984, 1987), Goulding (1981), IDESP (1984), Lessa (1984), Loureiro (1984, 1985), Maneschy (unpublished), Maués (1984), Penner (1984), Ribeiro Neto (1984), Sawaki (1984), Schnuettgen (1984), and Smith (1981).

# CHAPTER 5
# WORK, RESOURCES AND WELLBEING

The idea that *caboclo* populations sustain themselves on the basis of a flexible and complex set of productive activities is a persistent theme in the literature on the Brazilian Amazon. Yet, despite this emphasis, there are very few studies that have systematically analyzed caboclo sustenance strategies, especially among those that live along the rivers. Moreover, the majority of the studies that do exist are primarily descriptive analyses that do not attempt to quantitatively depict and analyse the various activities that riverine dwellers perform.

The purpose of this chapter is to address the relationship between households, the labor they have at their disposal, and their access to resources. The analysis is premised on the assumption that households are dynamic units. In their interaction with the natural environment, and in response to economic opportunities and constraints, the household allocates available labor (family members) to various sustenance activities. The way in which household members organize their efforts can be thought of as a function of its internal characteristics (e.g. number of individuals, stage in the life cycle), and its relationship to the resources at its disposal (broadly defined to include

water, land, and trees, as well as the opportunities for wage work).

The analysis of the economic activities carried out by members of households in Paruru provides important insights into the way in which riverine communities in Amazonia sustain themselves. The data permit an analysis of quality of life on the island by addressing the relationship between available resources and the standard of living that the household enjoys. When I analyse the information according to selected measures of natural resources (for example, the amount of land owned), the findings offer further conclusions regarding the way in which people respond to economic stress.

This chapter addresses two questions. The first question is: Do households with access to more resources on the island have a higher standard of living in terms of such variables as the number of consumer goods, housing quality, and the likelihood of being ill? The second question concerns the relationship between resources, and the type and intensity of work performed.Specifically, the question is: Compared to households with access to greater resources (e.g., greater amounts of land), are people in resource-poor households more likely to enter the wage labor market? Furthermore, are they more likely to work "harder" (i.e., perform a greater number of activities)?

These questions can be answered using two different kinds of data. On the one hand, there is the ethnographic information that I collected during the year I lived in the community of Paruru. Information of this kind provides insight into people's motivations, and offers a subjective understanding of

what people do. The ethnography draws on the collective memory of what has happened in the past, and what exists in the present. The ethnographic method yields rich descriptions of the rhythm of people's daily lives, and it documents the subjective interpretations that people have of the changes that they have experienced.

In addition to providing the basis for rich descriptions of household dynamics, the ethnographic data can also be used in a more analytical sense. For example, when I consider the questions posed above, two people come to mind: Domingos and Vicente. In many respects, their households are similar. At the same time, they differ in terms of resources available to them, and, as a consequence, they deploy household labor in different ways, and experience different levels of material well-being. A comparative ethnography of the two cases thus provides a wide range of details about how people make a living, and offers richly detailed answers to the questions posed in this chapter.

But the ethnographic data, and the use of deliberately selected case studies, limits the ability to generalize to the island as a whole. I can compare and contrast Domingos and Vicente to good effect, but two key issues then arise. Are the ethnographically-derived conclusions representative of the population from which the two cases are drawn? Furthermore, do the conclusions from the ethnographic analysis hold true once other pertinent variables are controlled?

To address these issues, I turn to the quantitative survey data that I

collected. Compared to the ethnographic material, the survey data are more limited (at least in terms of the details of specific cases), yet they offer quantitative measures of the key variables. Because the survey is based on a random sample, the data are representative of the population as a whole. The combination of ethnographic and quantitative data in this chapter reflects my commitment to the idea that different types of methods and data can be combined in a single analysis that produces more reliable findings than either approach alone.

## Domingos Silva and Vicente dos Santos

Domingos is 38 years old, and his wife Joana is 32. Domingos, Joana and all nine children were born in Paruru, and in a few months the tenth child will join the family. Domingos and Joana don't have much to fall back on even in the best of times. They live in a house surrounded by a few square yards of land which belongs to Domingos' mother. A few years ago, when they were taking care of a brother-in-law's property, they managed to save enough money to buy two hectares of land on the low island. During the same time period, his brother-in-law José gave him one hectare of land on the high side of the island. He has a few resources on the land: about 500 *açai* trees, 50 buriti trees, 85 native cacao trees, 750 planted cacao trees, 90 fruit trees, and perhaps 120 rubber trees. Still, these are not enough to support a family of 11 over the course of the year.

For the Silva family, the major focus of daily life is to find enough food to put on the table. The parents recall how they used to collect great quantities of *ucuuba* and *andiroba* fruits in the winter. Although they still collect the fruits, it has been ten years since they have been able to rely on them as a source of income. They no longer have much to fall back on during the lean winter months. When she can find a supply of *buriti* leaves, Joana weaves *tupés* (mats used for drying cacao and black pepper) and *tipitis* (funnels used to squeeze manioc dough and cacao seeds). The six oldest children, boys and one girl ranging in age from eight to sixteen, help Joana make the mats to sell for enough cash for a few grams of coffee and handfulls of manioc flour. The only daughter, 12 year old Lily, helps her mother care for the four smaller children. The 14 year old Lair and 16 year old Valdemar help their father chop down one of the trees on his small patch of land to sell for lumber, or seek a local day wage job when the family is truly strapped for cash.

During the summer months, the entire family participates in caring for the cacao on their land. Domingos and his sons weed the plot and prune the trees. When the fruits are ready to be harvested, all the children help collect them into large piles, while the older ones split the pods and remove the seeds. Domingos and Valdemar carry the large baskets full of seeds back to the house, where they will ferment and dry them over a period of a few days. The cacao usually brings a good price in the market in Cametá, which eases the burden a bit in the summer months.

From July to November, the family enjoys *açai* every day at their meals. Usually the 8- and 10- year old sons collect the inflorescences, the 12-year old daughter strips the fruit from the stalks and places them to soak in large wooden basins, and Joana processes the softened fruit into the drink.

Across the channel which divides the community into high and low island, lives Domingos' brother-in-law Vicente dos Santos. Vicente lives with his wife Dalva and 6 of their children in a spacious four-room house. Four of their children live elsewhere: one is married and lives in Paruru, and the other three live in Belém, where they study and work. At the moment, a 10-year old neighbor girl lives with them also, working for room and board so she can continue with her studies at the local school while her parents work in the pepper fields. All told, Vicente and Dalva support 13 people in their immediate circle.

Over the years, the Santos' have accumulated land, so that at the present, they own over 34 hectares of land on both high and low island. They have several thousand *açai* trees, an uncounted number of *buriti* palms and fruit trees, 20,000 native and planted cacao trees, 2,000 wood trees, and 1,000 rubber trees.

In the summer months, the Santos family keeps busy with cacao cultivation and harvest, and with the collection of *açai*. With the money they earn from these two products, they are able to tide themselves over reasonably well (by local standards) during the lean winter months.

## Determinants of Resource Availability

Residents of Paruru make their living by fishing and by extraction of forest products. As we saw in Chapter Two, and in the ethnographic sketch presented in this chapter, there are significant differences in the availability of those resources, based on ecological differences characteristic of the high and low sides of the island. This ethnographic information was confirmed in crosstabulations of the survey data. Households on the two sides of the island differ in two key variables: total size of property, and number of native cacao trees owned. At this level of analysis, other key resources--*açaí*, planted cacao, timber, and rubber--do not vary significantly by location of the household (table not shown).

The use of crosstabs is not sufficient to explain the effects of other potentially confounding variables. In this instance, a household's stage in the life cycle should be taken into account, because it too might affect the type and number of resources available to a household. As households move through the stages of the life cycle, there is a tendency to accumulate material goods. Hence, perhaps households who live on the high side of the island are better off in certain regards because they are at a later stage in the life cycle than those who live on the low side of the island. The age of the household head can be used as a proxy measure of the stage in the life cycle. Table 1 shows that, after controlling for the effects of the household being in a particular stage in the life cycle, location on the island has a statistically significant effect

Table 1: Selected Measures of Household Assets Regressed on Location and Age of Household Head.

| | Dependent Variable | | | | |
|---|---|---|---|---|---|
| Independent Variable | Land (1) | Wood (2) | Cacao (3) | Rubber (4) | Açai (5) |
| Age | 685.7 | .170 | 26.61 | 4.07 | 6.74 |
| Location | -46415** | -154 | -1861** | -225* | 40.21 |
| Constant | 24797 | 159.6 | 786 | 147 | 545 |
| R squared | .210 | .063 | .141 | .107 | .018 |
| N of cases | 42 | 42 | 42 | 42 | 42 |

* $.05 < p < .10$.
** $p < .05$.

on the amount of land, and the total number of cacao and rubber trees owned by a household. Households on the low side of the island own less land and fewer cacao and rubber trees. Thus location on the island continues to be a predictor for socioeconomic differentiation in the community. This differentiation has its roots in the unequal distribution of key natural resources on the island.

The socioeconomic differences between households observed on the island can also be measured in other other ways. I have selected three: living standards, deployment of labor, and involvement wage work. The next section takes up the first of these in a comparison of the living standards of households on both sides of the islands.

## Living Standards

An indicator such as a household's standard of living is difficult to measure in a community such as Paruru. Income is not a satisfactory measure, because households rely so heavily on non-monetary resources for their sustenance.

There are, however, some indicators that discriminate in terms of living standards. One such indicator is the number of consumer goods present in the household [1]. A second indicator is the housing quality index [2]. A third measure of living standards is the health status of the family [3].

The results are shown in Table 2. The first regression model uses the

Table 2: Regression Coefficients for Selected Household Variables as Predictors of Three Standard of Living Indices. (Standardized Coefficients in Parentheses)

| Independent Variables | Means | Standard of Living Indicator: No. of Consumer Goods[1] (1) | Housing Quality Index (2) | Illness Index (3) |
|---|---|---|---|---|
| Age of household head | 46.6 | .017* (.266) | -.005 (-.044) | .039 (.237) |
| Location of household[2] | .54 | -.277 (-.145) | -.905* (-.308) | .527 (.113) |
| Land[3] | 3.2 | .064** (.346) | -.017 (.062) | |
| Labor inputs[4] | 8.3 | | .011 (.051) | .101* (.287) |
| Whether the household hired labor[5] | .12 | | 1.418* (.310) | .275 (.038) |
| Water treatment[6] | 2.2 | | | -.050 (-.018) |
| Constant | | .278 | 8.94 | 2.44 |
| R squared | | .270 | .203 | .137 |
| Number of cases | | 42 | 42 | 43 |
| Overall mean | | 1.1 | 85 | 5.3 |

* $.05 < p < .10$, ** $p < .05$.
[1]Calculated by adding the scores for owning television, refrigerator, radio, generator, furniture, motorboat
[2]Location of household is scored as follows: 0=high, 1=low.
[3]Measured in hectares.
[4]Total number of economic activities performed by household members
[5]Hiring of labor was scored as follows: 1=yes, 0=no.
[6]Quality of water treatment, ranked 1-5 (Increasing with quality).

number of consumer goods as the dependent variable. In this case it is important to control both for the location on the island and for the age of the household head. These variables are necessary because of the relationship between life cycle stage and the accumulation of assets and because of the demonstrated relationship between location and access to resources. The findings confirm that, after controlling for age of household head and location on the island, the greater the size of landholdings, the greater the number of consumer goods a household will own.

The regression model presented in the second column of Table 2 uses the housing quality index as the second dependent variable. The results indicate that people on the lower side of the island live in houses of poorer quality than do people who live on the higher side of the island. The coefficients further indicate the housing quality index is higher among those households that hire wage workers. This result is consistent with later findings showing that resource-rich households are the ones that employ others.

The final indicator of standard of living is the illness index. The analysis in column 3 shows that the only statistically significant variable is the number of labor inputs. A more detailed discussion of the meaning of this variable follows in the next section. For the moment, however, the point is that those households whose members engage in more productive activities are also the ones whose members experience a greater number of reported illnesses. Hence, the findings show that those households that are compelled

to work harder are those with poorer health.

The findings presented in this section show that after controlling for the effects of location and life cycle, there are still differences in households' access to resources. The differential access to resources affects households' standard of living. As we shall see in the next sections, this differential access to resources also affects the types of sustenance strategies used by households on each side of the island.

## Resource Availability and the Deployment of Household Labor

Despite the limitations imposed by cross-sectional data, I can analyse the data at one point in time in order to generate important insights into the relationship between the available resources and the deployment of household labor. The objective is to compare the patterns of work that characterize resource-rich households with the patterns of work characteristic of resource-poor households. The most striking contrast is in the sheer number of activities engaged in by the household members. In the case of Domingos Silva, for example, seven of the eleven members of the household perform one activity or another. If I calculate the sum of all the various activities that all members of the Silva household perform, the total comes to 20. The situation is very different in Vicente dos Santos' household. In this case, the sum of activities comes to only seven. For the purposes of subsequent analyses, I refer to this value as a measure of 'labor inputs' (that is, the total number of productive

efforts, defined as self-reported involvement in extraction, production, or processing of a given commodity).

As I have shown in the ethnographic analysis, Vicente is better off than Domingos in terms of a number of different social indicators (land, acai, fruit and timber trees, cacao and rubber). The qualitative data therefore suggest that poorer households are under greater economic stress. Moreover, the ethnographic information leads me to conclude that they respond to this circumstance by a more intensive allocation of household labor (as measured by the number of labor inputs). But if this conclusion is based solely on the qualitative data, it cannot be generalized to the population as a whole. Moreover, it is crucial to take into account several other factors that might account for the differences in the two case studies.

To address these issues, I turn to the survey data. Specifically, the objective is to use labor inputs as the dependent variable in a statistical analysis of the relationship between this indicator (labor inputs) and selected measures of the resources available to the household. I have also included two other variables in the analysis in order to control for potentially confounding effects. The number of potential workers in the household, for example, is a relevant control because, other things being equal, the number of labor inputs may be higher in those households that have a greater number of potential workers (people from 10 to 70 years of age).

It is also important to statistically remove the effects of location of the

household on the number of labor inputs per household because, as I have shown earlier, the two environments are very different. Since households on the high side of the island have more resources (and hence more resources to exploit), one might conclude that they also are the ones who perform the most activities. However, ethnographic observations indicate that the reverse is true--that households with *more* resources perform *fewer* activities. Regression analysis allows me to control for the effects of the households' location on the island to see whether or not this prediction is true. To briefly summarize, I use the quantitative data in order to determine if the conclusion from the ethnographic analysis is sustained. More specifically, my objective is to determine whether--controlling for the number of potential workers in the household, and the potential effects associated with island type--households with fewer resources put people to work in more activities. In this case, I have measured 'resources' in terms of the number of hectares of land, the number of timber trees (labeled 'wood' in the tables), of cacao, açai and rubber trees, and finally the total number of trees (sum of timber, cacao, açai and rubber trees).

Table 3 shows the results of the various regressions. The values given in the first column refer to the means of the various indicators, for all households in the survey. The average number of potential workers per household, for example, is 4.3. Similarly, 54 percent of all households are located on the lower island, and the average number of hectares per household is 3.19. The

Table 3 Total Number of Labor Inputs Per Household Regressed on Selected Household Measures (Standardized Coefficients in Parentheses)

| Independent Variables | Island Means (1) | Regression 1 (2) | 2 (3) | 3 (4) | 4 (5) | 5 (6) | 6 (7) |
|---|---|---|---|---|---|---|---|
| No. of potential workers in the household | 4.3 | 1.80** (.605) | 1.76** (.589) | 1.75** (.589) | 1.71** (.589) | 1.51** (.509) | 1.71** (.576) |
| Location of household | .54[1] | -2.32 (-.174) | -1.71 (-.128) | -2.15 (-.161) | -2.22 (-.167) | -.671 (-.050) | -1.94 (-.145) |
| Land | 3.19 | -.328* (-.257) | | | | | |
| Wood | 85.2 | | -.006* (-.254) | | | | |
| Cacao | 1021 | | | -.0007* (-.282) | | | |
| Açai | 881 | | | | | -.001 (-.129) | |
| Rubber | 216 | | | | | | -.005** (-.286) |
| Total number of trees | | | | | -.0006** (-.315) | | |
| Constant | | 2.127 | 2.032 | 2.568 | 3.485 | 3.061 | 2.993 |
| R square | | .341 | .300 | .358 | .377 | .305 | .364 |
| N of cases | | 43 | 43 | 43 | 43 | 42 | 42 |

Notes:

** Significance .05 or less
* Significance between .10 and .05
[1]Percent of households on low island

means for the other indicators offer a profile of the resources available to people in Paruru: 1021 cacao trees, 881 açai trees and 216 rubber trees.

The first regression, presented in column 2, controls for the number of potential workers and location on the island, then introduces into the analysis the amount of land that the household owns. It is not surprising that the total number of workers has a positive sign. This indicates that, other things being equal, households with more potential workers are those that have a greater number of labor inputs.

But the most relevant issue at this point in the analysis is the negative and statistically significant sign for the measure of land assets. The findings indicate that, after controlling for the effects of the two variables, the more land at the household's disposal, the fewer the number of labor inputs. The model, even though based on only 43 cases, is nonetheless a good predictor. The three independent variables explain 34.1 percent of the variance in labor inputs.

Regressions 2, 3, 4, 5, and 6 show similar tests for the effects of the other indicators of household assets. As shown in columns 3 through 7, the greater the amount of wood, cacao, rubber and total trees, the lower the number of labor inputs. The case of açai is the only exception (the relationship is not statistically significant). Undoubtedly the reason that the quantity of acai trees has little predictive power is because virtually everyone on the island has acai trees. Hence, the variable does not distinguish between resource-rich and

resource-poor households.

The quantitative analysis therefore supports the conclusion derived from the ethnographic data: Households with fewer resources at their disposal, have a greater number of labor inputs. In other words, one response to fewer assets is to intensify the efforts of household members on the land where they live. But there is another way in which household members respond to limited resources. During the months of August and September they can enter into the off-island wage labor market in order to earn the money required to make ends meet.

## Wage Labor

Domingos has worked in the mainland pepper fields for most of his life. He remembers rowing with his grandfather to the fields in Tomé-Açú even as a teenager. For the past three years, he has taken his entire family to work in his cousin Walter's pepper fields on kilometer 33 of the Cametá-Tucurui highway. Walter spent many years of his childhood in Paruru, and now that he owns his own pepper fields, every year he hires families from Paruru to weed, plant and harvest the pepper.

If asked why he takes the whole family to the pepper fields each year, Domingos is likely to lean back against the wall of his two-room house, roll a cigarette of tobacco cut from a pungent black coil, and give three reasons why. He will tell you that he believes that it is essential to try to keep the family

together, because children are a gift from God, and only a mother and father can treat their children with the love they need. He will also point out that since he doesn't own much land, and what he does own is plagued by daily flooding and by two neighbors' pigs, he isn't able to plant crops to sustain the family in his absence. Furthermore, the wages he earns in the pepper fields are barely enough to cover his own food; it is really impossible to save enough money to send back home for the family to eat. He and Joana have concluded that it is far better to keep the family together, and now that so many of the children can work in the fields, they pick enough pepper to feed themselves during those months.

By contrast, Vicente dos Santos never works in the pepper fields on the mainland. If Domingos has to go to work for others, Vicente usually has enough money from the sale of his cacao each year to hire people to work in his own fields. In the course of the year, Vicente hires wage workers to clear his numerous cacao plots, and to weed his experimental black pepper fields located on a small patch of high, dry land on Paruru.

These ethnographic observations suggest a relationship between the quantity of resources that people have on the island and the likelihood of having to work for wages on a seasonal basis. Turning to the quantitative data, I can use as a dependent variable the number of off-island jobs that people take over the course of the year. As in the previous analysis, it is important to control both for the number of potential workers in the household

and the location on the island.

The results of the regression analysis are presented in Table 4. The equation includes three variables: the number of people in the household, the location on the island and total number of trees owned. The results indicate that, controlling for the first two variables, the greater the total number of trees owned, the fewer the number of off-island jobs members of a household will take.

If the above analysis shows that resource-poor households are those that send members into the wage labor market (as in the case of Domingos), it raises a further question: Do resource-rich households tend to hire wage workers (as in the case of Vicente)? The findings shown in Table 5 show a clear pattern. The likelihood of hiring workers is positively correlated with the amount of land owned, and the number of cacao, wood and rubber trees[4]. In other words, those households with more resources are the most likely to hire wage workers themselves.

The findings in this chapter show that a) households on the the high side of the island have more resources than do households on the low side of the island; b) the larger the size of the property a household owns, the more consumer goods it will own; c) households that hire wage workers live in better houses; d) members of households who work harder are also more likely to be ill; e) households with fewer resources work harder; and f) the more resources the household owns, the fewer of its members will work in

Table 4: Bivariate Correlation Coefficents Showing the Relationship between the Abundance of Selected Household Assets and the Presence of Hired Wage Labor.

| Asset | Coefficient |
|---|---|
| Land | .579** |
| Cacao | .623** |
| Wood | .455** |
| Rubber | .331** |
| Açai | .038 |

** $p < .05$.

Table 5: Bivariate Correlation Coefficents Showing the Relationship between the Abundance of Selected Household Assets and the Presence of Hired Wage Labor.

| Asset | Coefficient |
|---|---|
| Land | .579** |
| Cacao | .623** |
| Wood | .455** |
| Rubber | .331** |
| Açai | .038 |

** $p < .05$.

wage labor.

Each of these findings supports the argument of this chapter: that ownership (or the lack of it) of the resources on which islanders base their sustenance is a fundamental indicator of socioeconomic differences between households. If a household owns resources, its members will work for themselves rather than for others. They will be better off than households on the low side of the island, have more consumer goods and are less likely to suffer from illnesses. They will perform fewer economic activities than households on the low side of the island, and will hire wage workers to perform activities that they otherwise might do themselves.

Given the fact that the resource base of the community is severely compromised, the findings in this chapter indicate that in all likelihood socioeconomic differentiation will increase in the future. For the moment, people have been able to continue to draw on their traditional social and economic ties (albeit sometimes in modified form) in order to make a living. Nonetheless, the very fabric of their culture is being undermined. This point is not lost on them, as Chapters Six and Seven illustrate. They have had to adjust the timing of their annual celebration in honor of their saint to compensate for the new economic reality. They have also begun to look beyond the community itself to seek solutions to their current situation. Islanders may very well be at a critical threshold, when they will lose control over their means of production and have to sell their labor instead, in order to sustain

themselves. For the moment, they struggle mightily to maintain their way of life, adjusting their sustenance strategies to meet the new reality, and mobilizing politically in the defense of their own interests.

# Notes

[1] In order to calculate this variable, I added the scores (1=yes; 0=no) for whether or not the household owned a television, refrigerator, radio, generator, furniture, or motorboat. A comparison of Domingos and Vicente is revealing. The former has a value of 1 on this variable (one radio); the latter, a value of 4 (television, radio, furniture, motor boat). The mean score for the island is 1.1 consumer goods per household.

[2] To construct this variable, I took into account the type of floor, wall, roof and light used by the household. Within each of these categories, I ranked each possible type by the quality of the materials used (roof type 1-3, wall type 1-3, floor type 1-2, and light type 1-3), with the lowest number assigned to the lowest quality material. Thus, for example, a roof made of palm leaves received a score of 1 and a roof of palm leaves and tiles a score of 2, while a roof of tiles received a score of 3. (See Table 2 in chapter 2 for the full listing of materials used in house construction). I then added the scores together. The mean housing quality index for the island is 85.

[3] In this case, I asked whether any member in the household had suffered from specific ailments during the past twelve months. For an answer of yes I assigned a score of 1, and for an answer of no, I assigned a score of 0. I then added up all the ailments to comprise a general index. The average number of illnesses per household is 5.3. I make no claims that this is medically valid. Nonetheless, the measure seems to show some variance consistent with expectations.

[4] In this case I cannot use regression analysis, as I have done in the other tables. The reason is because the dependent variable -- whether the household hires wage workers -- is dichotomous. Hence, the assumptions of regression are violated.

# CHAPTER 6
# AFFIRMING THE COMMUNITY: FESTIVALS AND FUNERALS

This chapter looks at two rituals which illustrate the links between the community of Paruru and its resource base: the celebration in honor of the community's patron saint, and a funeral.

The annual saint's festival is part of Amazonian tradition. Towns large and small honor their own patron saint, following traditions which have been practiced for a long time. Itá, Wagley's *Amazon Town*, continues to honor its Saint Benedict every December; Belém, the gateway to the Amazon, draws pilgrims from around the world during its celebration for *Nossa Senhora de Nazaré* each October.

Paruru honors its patron saint, the *Espirito Santo* (Holy Spirit) in a seventeen-day long festival. The celebration is the highlight of the year for residents of Paruru. Traditionally, the community celebrated its festival in May, at the end of the winter season. By that time, people had collected large numbers of the *ucuuba* fruits which floated out of the forest on the surface of the water. They sold or exchanged these fruits in arrangements with local traders, and thus had the means to participate in the events surrounding the festival.

As a consequence of intense exploitation of the timber species (*Virola*

*surinamensis*) from which these fruits come, people can no longer count on collecting sufficient quantities of *ucuuba*. During the same period of time, the other resources were coming under increasing pressure from outside forces. One of the most telling blows to the socioeconomic fabric of the community was struck in 1984 when the floodgates closed on the Tucurui hydroelectric dam upstream from Paruru. Most of the fish who had survived the pressure from commercial fishermen, now either died or sought other rivers when they found the new aquatic environment to be hostile to their reproduction and survival. In one stroke, residents of Paruru lost their principal source of protein, and an important medium of exchange for goods they could not obtain on the island.

As I have shown in Chapter Four, the end result of this pressure has been the erosion of the resource base upon which the community of Paruru relies to make a living. Paruruenses are finding it increasingly difficult to sustain themselves with the traditional strategies.

No single community decision better reflects the fundamental change in the relationship between the community and its resource base than the change in the date of the saint's festival. Since 1985, a year after the closing of the dam's floodgates, the community has celebrated the festival in September, during the summer. The principal resource associated with this period is the fruit of the *açaí* palm, which traditionally has been collected only for the household's daily consumption needs. In recent years, people have begun to

sell *açaí* for cash in the market in the mainland town of Cametá, when they need money to buy food or to participate in events such as the festival.

The festival also symbolizes the links within the community and beyond which form a part of the socioeconomic context within which Paruruenses make a living. I have selected three events surrounding the festival to illustrate the relationship between Paruru and other groups: the *Círio* (the saint's procession), the *Esmola do Santo* (alms for the saint), and the visit of politicians from the municipal seat of to which Paruru belongs. The *Círio* affirms the links between Paruru and its neighboring community, while the *Esmola do Santo* affirms the links within the community of Paruru itself. The visit from politicians highlights the links between the community and the outside world, between river and land.

The funeral of an old man in a neighboring community presents the opportunity to contrast the cash-based funeral arrangements characteristic of the urbanized mainland, with the traditional community-based funeral arrangements still preferred by many islanders. The taboos which accompany the death of an individual highlight household's relationship to traditional resources. During the period of mourning, the bereaved cannot harvest any resources for fear of causing damage to the resources or to themselves, and must rely on kin and on special credit arrangements with local small merchants to sustain themselves.

## The Círio

By 4:00 in the afternoon on Saturday, people begin to listen for the sound of approaching motorboats which will join the procession to get the saint from Paruru de Baixo. Presently one large boat chugs up the river to the *barracão,* bright paper streamers fluttering from wires strung across the roof lined with aluminum sheeting. Soon it is joined by two other boats. A music band complete with trumpet, tuba and drum set, sits on handmade wooden chairs atop one of the boats. The three boats are owned by men from neighboring communities, who join Paruru's festival every year.

Within twenty minutes, the two ladders leading up to the *barracão* dock are laced with the leads of canoes as people gather for the *busca do santo.* They fill each of the three motorboats, and it is time to begin the procession. The band strikes up a tune, men set off firecrackers, and the boats ease away from the dock.

Although the actual distance is short from the *barracão* to Paruru de Baixo, the procession moves slowly, savoring the moment. The boats travel close together, sometimes three abreast. They finally dock at the community's chapel where residents of Paruru de Baixo await them. All file into the small, freshly swept wooden building, where they sing a song in honor of the saint. They then gather around a small wooden table which holds glasses with small portions of coffee. As each person finishes the beverage, he or she rinses the glass in a basin of water and hands it to a neighbor to be filled again. As they

move away from the table, people reach for small white candles set out on a bench nearby, and prepare to light them for the procession (known as the *Círio*) back to the *barracão*.

It is an honor for the community of Paruru de Baixo to safeguard the saint in the days before the festival. Even so, the community faces the same dilemma as all island communities: there are few opportunities to obtain cash. Providing coffee and candles for the one hundred or so pilgrims represents a genuine sacrifice for Paruru de Baixo.

The air inside the chapel is rich with the aroma of the coffee. It mingles with the scent of bodies freshly scrubbed with yellow bar soap and rinsed with river water, and of clothes scrubbed with the same sturdy soap, dried in the sun, and pressed with charcoal-heated irons.

Soon the warm sweet smell of melting wax fills the air as people light their candles and move back out into the dusk to the waiting boats. This year old Sr. Benedito carries the saint from the chapel to the *barracão,* to fulfill a promise he made during the past year.

The three boats move slowly up the channel, the white of their hulls turning a soft pink in the glow of the sunset. The water looks like liquid silver this time of day. All along the way, people stand at the end of their docks holding lit candles. Some cross themselves as the saint passes by.

The *barracão* stands out like a giant wedding cake in the dusk, freshly painted white and strung with colored paper banners. One can hear the throb

of the new generator under the music being blasted out from the twelve six-foot speakers rented for the festival. A young man on the lookout for the arrival of the boats spots them and quickly lights the fireworks set out on the dock in welcome. The disk jockey hired for the festival cuts the music.

It is a moving moment as people disembark, still holding their lit candles, and file towards the chapel singing a song of praise to the saint. Sr. Benedito leads the way, holding the saint, and as the crowd enters the chapel, they walk four and five abreast down the central aisle to the altar. The white wall behind the altar is covered with paper flowers in navy blue, bright red, yellow and white. Several women in the community are paper craft specialists and spend many hours decorating the chapel for the festival. Tall lit candles crowd the altar. The cloth covering the altar is starkly white, no small accomplishment here where it is laundered in brown, sediment-laden river water and pressed with a charcoal-heated iron. When the saint is placed carefully in its spot, the effect is quite beautiful: the saint's crown glows like gold, colorful ribbons tied to the saint look like rich satin and the paper flowers seem almost real in the glow of the candles.

People light more candles and find a seat on the narrow wooden benches arranged in two neat rows. The men sit on the left, and the women sit on the right. On each side, a bench along the wall joins the front row bench at a right angle. The men and women who will lead this evening's novena sit in these L-shaped areas. The service proceeds through the well-known ritual.

Although the priest only comes to the community once a year, to celebrate the full mass and baptize children during the saint's festival, the lay leaders of Paruru take their responsibilities seriously, holding catechism classes regularly and meeting for a *reza* every week. Nearly all those present tonight know the responses for the service from beginning to end.

The ten or so women seated in the L-shape on their side of the chapel lead the singing from song sheets prepared specially for the festival. They have diligently practiced these songs for several weeks, meeting at different houses several times a week. They even learned some new tunes from records of religious music which they played on a red plastic, portable battery-operated record player. The daughter of one of the community's wealthier members typed and mimeographed one hundred copies of the sheets in Cametá, where she runs a pharmacy with her sister and brother-in-law. Those responsible for the service distribute the song sheets to people as they enter the chapel, and collect them at the end.

The entire service is broadcast into the night air through a microphone hooked up from the chapel to the speakers distributed around the dance floor next door. At the close of the service, the disk jockey picks up his cue and plays a song of praise from one of a handful of religious records he has. As soon as the strains of the praise song die away, the jockey selects a dance tune, and the secular celebration is underway once more. Several children stay behind in the chapel to scrape up the gobs of wax left in front of nearly every

bench by the melting candles. Men stroll over to the bar with their wives and order a liter of beer. In a little while, teenage boys overcome their shyness and ask girls to dance, and soon others join them. They will dance for three or four hours, and then slip away in their canoes for the night.

*Esmola do Santo*

It is the third day of the novenas, and Anna has a long day ahead of her. She volunteered to collect the *esmola do santo* today. Six months ago she had promised the Holy Spirit she would do so if she got that teaching job she wanted so badly. She quickly swallows a half-glass of hot coffee and carefully carries the crown out to the family motorboat, where her husband Manuel and son João already wait to begin the rounds.

As they approach the first house on the route, João cuts the motor and Manuel beats on a small drum to announce their arrival. As João ties up to the dock, the wife comes outside and invites them up. Anna climbs up the dock ladder, balancing the crown in one hand. She is joined by João, and together they follow their host into her front room. Anna places the saint on the dresser, where everyone can see it.

Soon the front room is crowded, as the rest of the family comes to admire the saint and talk about the upcoming events of the festival. One of the teenage daughters comes from the kitchen bearing a battered, aluminum tray with two glasses filled with hot, sweet, black coffee. Because this is a

special occasion, she has dropped a spoonful of tinned butter into each glass. She serves the coffee to Anna and Manuel, politely standing beside them as they drink, tray at the ready. It is bad form to make guests hold an empty glass in their hands.

When they finish their coffee, Anna stands up. The father of the household comes forward with several notes of money and hands them to Anna for the saint. She thanks him for his generosity, and leads the way out to the boat. As they file across the dock, Manuel beats the drum again. They climb into the boat and are on their way to finish their round of visits.

This evening Anna and Manuel will count up the money they collected, and deliver it to the Festival treasurer. Tomorrow the next volunteer will come for the saint to make his rounds, and so it will go for five days. In the end, the entire community will be canvassed for contributions. All the money collected goes towards the costs of the festival.

## The Holy Spirit and Politics

At 7:00 a.m. the first day of the *novenas*, about thirty members of the community gather at the *barracão*. This morning the mayor of Cametá will deliver the long-awaited diesel generator he has promised the community. Around 8:30 the mayor's boat noses into view, and is welcomed by firecrackers set off on the *barracão* dock. The prefeito stops quickly at Antonio Barra's house first to pick him up, and then comes on over to the church. As

the mayor, Barra and several *vereadores* from Cametá climb up the ladder to the dock, the women sing a welcoming song about friendship. The men unload the generator and supplies such as pipes, diesel oil, wiring and light bulbs.

Then the mayor makes a short speech about the significance of this gift, and reminds them that he had planned to give the generator to the community for two years. The delay was the result of the financial crisis in the nation with the *Plano Cruzado.* Because the county was short on funds, the generator had to be used first for a year elsewhere, while the *prefeitura* built a bridge. But it was here now, and that was the most important thing. The *prefeitura* will be responsible for repairs and oil changes, and a volunteer in the community will be responsible for keeping an eye on it and serving as a liason with the *prefeitura.*

The mayor then speaks of the upcoming elections only two months away, and asks for everyone's vote. He outlines the accomplishments of his term. He adds that no-one could promise to end hunger in the region, because that is a structural problem at the national level.

After the speech, the group applauds politely, and the women sing another song. The mayor leaves, but two of his officials stay behind to help set up the generator; one of them is Didico Gaia, a member of one of the largest families in Paruru. He is also currently *vereador* with the mayor's party.

## Funeral

During the saint's festival, an old man has died in the neighboring community. He was related to a number of people in Paruru and Cametá. He was about 75 years old, and had a stroke several months previously. He spent several months in the hospital in Cametá, and came back to the island two months ago when the doctors gave up hope.

The old man had lived with his wife in a small wooden house set in a curve in one of the narrow rivers which branch through the island. Their piece of land is slightly higher than that of many of their neighbors and so their yard is usually dry. Enormous *jambo* trees spread their gumdrop-shaped canopies over the house, and toucans (scientific name) fill the trees at this time of year when the trees are bearing their fruit. The yard looks like a gigantic tropical Christmas tree collection, with the deep, velvet green of the broad leaves contrasting with the rich fuschia-colored fruits and flashing black and yellow toucans as ornaments.

The day is bright, and a cool breeze so typical of this time of year rustles through the trees. The old man's house is simple, consisting only of a front room, a sleeping room, and a kitchen. No wall has ever been built on one side of the front room, leaving it open permanently to the cooling breezes. In fact, the sleeping room is the only one which has four full walls; although there is a door opening in the sleeping room, no door has ever been hung.

The old man is laid out on a table covered with a white cloth, in the

front room. His jaw is tied shut with a strip of white cloth, and cotton plugs have been inserted in his nostrils and ears. He is covered with a white sheet up to his chin, and has a crucifix placed on his chest, because he is too twisted from the stroke to clasp the crucifix in his hands. Candles burn on either side of his head and feet. His widow sits next to the body, her head bowed on the table. An adult son sits next to her.

By noon, news of his death has spread throughout the communities on the island. People arrive in a steady stream, tying up their canoes and joining mourners already seated on the floor and on the narrow bench nailed along one side of the room. They talk quietly amongst themselves. Periodically the widow and daughters break into tears, sometimes in the sleeping room and sometimes in the front room, and are comforted by other female relatives.

The old man's grand- and great-grand children, along with visitors' children, seem perfectly at ease with the presence of death. Sometimes a child or two stand near the body, looking at it and stroking one of the feet, or lighting a new candle as the old one gutters out. Most of the time, they play out in the yard, competing fiercely and joyfully with the pigs for the *jambo* fruit thrown down to the ground by their companions high up in the trees. The air is filled with the sounds of pigs grunting, toucans shrieking, and children giggling, as they all vie for the same treat.

At 3:00 p.m., a small motorboat filled with more relatives arrives from Cametá. The women relatives of the old man quickly retrieve the water

biscuits and coffee which arrived on the boat. Soon a young girl comes out of the kitchen with a tray of biscuits and three glasses of coffee. Since the household only owns the three glasses, she begins serving the coffee at the corner of the room and works her way around. Three guests at a time take a biscuit and a glass of coffee. Each downs the coffee in two or three swallows and places the glass back on the tray held by the girl. When all three are finished, she rinses the glasses in the kitchen and returns with them newly-filled for the next group. The coffee is a welcome break, generously laced with sugar and tasting smoky from the wood fire over which the water was heated.

The newest batch of relatives bring some bad news along with the biscuits and coffee. The family had joined a funeral insurance program in Cametá, which requires six months of dues before the insured person can claim the services. If the person dies after the six months, he or she receives a coffin and other minor benefits. However, this man died after only four months, and so the family lost the money they had paid in dues, and had no coffin. Some relatives had gone into to Cametá to try to arrange for the coffin anyway, to no avail.

The mourners gathered at in the front room listen to the news and begin to comment among themselves. One woman says she considers it a waste of money to pay into the funeral insurance plan, because she knows that when she dies, her family will not leave her "on top of the ground to stink" (*em cima da terra para feder*). Others join in, saying that it would have been

better to rely on the community to begin with. By this time of the day, the community could have made a coffin several times over, in the time the relatives were trying to sort out the situation in Cametá.

The family has to move quickly to make all the arrangements to have him taken to Cametá. By law, burial must take place within 24 hours of the death. The relatives begin to arrange to make the coffin locally. One man supplies the wood from logs he had cut on his own land, and Gercy the master carpenter is asked to build it. It is completed by midnight. It arrives just as visitors come after the *novena* at the *barracão*. People help line the box with white cloth and decorate it, until 4:00 a.m. Then the body is taken for burial to Cametá.

There are no charges to bury the body at the cemetery in Cametá. People just pick a spot and dig. The only costs for a funeral "in community" are nails, cloth for lining, and coffee or other refreshments. The wood is donated, as are the services of the carpenter. If the carpenter refuses, he is spurned by the community.

The relatives of the old man will observe certain rules of behavior surrounding a death. If one's father or mother dies, one must observe *preceito* (mourning) for one year. If a brother, sister, or grandparent dies, one follows preceito for six months; for a cousin, three months.

During the first eight days following the death, no members of the immediate family may touch any plants or fish. They may collect *açai* for their

meals, but at the risk of having it spoil quickly. They never eat fruit during this time, for fear their teeth will rot.

Since family members are limited in what they can eat from the land, they must rely on store-bought food such as canned meats. They can request food on credit from local comércios during this time, to be paid back over a period of a month or two.

Although it is generally agreed that families in mourning should not be present at the dances during the saint's festival, the rules are not so clear with regard to masses and *novenas*. Some worry that others will censure those bereaved who attend as behaving improperly and not showing sufficient respect for the dead. Others disagree, saying that masses and prayers help the dead and so it is good to participate.

There is also divergence of opinion about whether preceito applies equally to relatives by blood and marriage. One woman pointed out that the rules apply equally, because after marriage the blood mixes. Another disagreed, saying that none of the rules needed to be observed by relatives by marriage. In her view, if a relative of her's died, her husband would not observe *preceito*, but the children would because they are partly her blood.

The ethnographic data presented in this chapter emphasize the strong links which continue to be valued between households within the community of Paruru and between Paruru and other communities. However, the traditional relationships are no longer able to provide sufficient support in this

new period of stress on the community's resource base. People are finding that they must look beyond the community for a solution to their current situation.

As we shall see in the next chapter, the most visible strategy they have taken is a political mobilization against the Tucurui dam. Although we have seen in previous chapters that the community is undergoing incipient social differentiation, traditional ties are still strong enough to allow residents of Paruru to seek solutions to their dilemma as a community rather than as individuals.

# CHAPTER 7
# STEMMING THE TIDE

As we have seen in previous chapters, residents of Paruru respond to stress and change in various ways. In the past 25 years, they have responded in two main ways to external market demands for certain key resources, such as wood and fish. During the first phase of the increased demand for the resource, islanders simply sell their own surplus to middlemen. In the second phase, when the resource is significantly less available, islanders themselves engage in what might be termed "predatory exploitation" of those resources. This may take the form of local sawmills which cut down the remaining stands of certain wood trees. Or, it might take the form of fishermen using new technology, such as small-gauge castnets, to capture the smaller fish left behind. These responses, coupled with the even more predatory strategies of exploitation adopted by outside concerns such as commercial fishermen and international logging companies, have brought Paruru islanders to a point of severe economic distress.

We have seen how islanders are responding to the present situation. Sometimes they intensify their efforts to make a living on the land where they live. Other times they send members of their families to work in wage labor on

the mainland. They have changed the timing of the most important event of the year, the saint's festival, because people can no longer rely on the winter-based resources they had in the past.

The most recent change for Paruru came with the building of the Tucurui hydroelectric dam[1]. By the year 2010 the Brazilian government intends to build eighty dams throughout the Amazon river basin. The projects will be constructed by the state-operated electric company, Eletronorte. The dams are an integral part of the government's overall goal of reducing the country's balance of payment deficits by providing hydroelectric rather than petroleum generated power to large scale enterprises in Amazonia.

The Tucurui dam is the largest dam in the tropics, and the fourth largest in the world. By the time the floodgates closed in 1984, controversy surrounded the project. Critics believed that environmental and social issues had not received the consideration that they deserved (Maltez and Maltez 1984; "O mal que virá de tudo que ficar sob o lago de Tucurui" 1984; Usina de Tucurui foi erguida sobre falha geológica" 1986)

There was ample cause for concern. The area designated to be flooded by the 245,300-hectare reservoir south of the dam was densely forested, with an estimated 2.8 million trees and shrubs. CAPEMI, the company awarded the contract to extract the lumber from the area, failed to do so. The lumber left to decompose under water threatened to damage the dam's turbines and to pollute the waters of the Tocantins River (Schmink 1989).

People living in the reservoir area were not allowed to plant crops during the three years preceding the flooding. The value of land is calculated according to "improvements" the resident has made to the parcel of land, including buildings constructed and crops planted. By law, Eletronorte had to indemnify a large number of peasants who were to lose their land in the reservoir area. To reduce the amount spent on indemnifications, Eletronorte forbade planting of crops so the value of the land would decrease. Without their crops, and unable to buy food, many families endured extreme hardship. When Eletronorte eventually indemnified them for their losses, the calculations were based on the reduced value of the land (Biery-Hamilton 1987). Relocated families had no reserves of cash or food to help them through the transitional period (Biery-Hamilton 1987, Mougeot 1987).

Approximately 40,000 peasants live on the hundreds of islands scattered between the dam and the mouth of the river; they have also suffered the effects of the Tucurui dam. Although they continue to live on the islands, the closing of the floodgates in 1984 fundamentally changed their relationship to the environment around them. If peasants above the dam have suffered the loss of their land, peasants below the dam have suffered the equally damaging loss of their water.

## Local impacts of the Tucurui dam

Soon after the floodgates closed, island residents noticed changes in the

river. Normally a clear blue in the dry season and light clear brown in the winter, the water took on a greenish-brown color. Large sheets of green scum floated on the surface of the water. This green scum in all likelihood originates from a process of nutrient loading in the reservoir, which causes an algal bloom (Viessman, personal communication).

People experienced severe gastrointestinal disorders; several children died during this period. Skin rashes plagued everyone, and women suffered from vaginal infections so serious that many thought they had contracted a venereal disease.

By the end of 1987, swarms of water-borne insects clogged the river. In some areas, people could scoop entire handfuls of these out of the water at a time. Drinking water had to be strained repeatedly through several layers of cheesecloth in order to rid it of insects. Since the insects concentrated especially along the river banks, people had to paddle out to the middle of the river to bathe. When the tides went out, a dense layer of insects remained behind on the shore.

Crops suffered as well. Wherever water stood for awhile during the daily tidal flooding, cacao trees lost their bark from the ground up to the water level. By early 1988, cacao production had plummeted; some cultivators reported losing two thirds of their harvest to pests and decreased fruiting.

The *açai* palm was also affected. The fruit frequently dried on the tree before it could be harvested. The fruit which was salvaged produced less pulp

than was considered normal.

Island residents attribute the decrease in production of cacao and *açai* to two things. First, they note that many poisonous vines and trees were submerged by the reservoir. They contend that when the vegetation was in the first stages of decomposition, it was the poisons from those trees and vines which were carried in the water and which stripped the bark from the cacao trees. Second, they observe that they no longer see sediments deposited on the land as occurred during the flooding cycles. Thus both cacao and *açai* are probably suffering from nutrient deficiencies.

By far the most serious dam-related change was the virtual disappearance of fish and shrimp from the river, changing the very fabric of daily existence. In tropical rivers, most fish species are migratory. When a dam is built, migration patterns are disrupted. In addition, there is an interruption in the flow of suspended materials and gases which sustain river life; the flow of the river is reduced, shrinking the area of water downstream; and there is an increased salinization of the water. In sum, fish disappear because they can no longer survive in the drastically modified environment (Goldsmith and Hildyard 1984).

People spent increasing amounts of time trying to catch enough to feed their families, to the detriment of other activities. Before long the small number of family-raised pigs and chickens were consumed. Finally, island dwellers no longer had a medium of exchange for mainland goods. As a

result, they no longer had access to staples such as manioc flour, constricting their diet even further.

## The Role of the Catholic Church and the Rural Workers' Union

Several years before peasants downstream suffered any effects of the dam, people living around the projected reservoir area were already engaged in a struggle to protect their livelihood. Two key players emerged from the situation at the reservoir who were to play a fundamental role in giving a voice to island dwellers: the Catholic church, and the Rural Workers' Union. The Catholic Church has long been actively involved in peasant struggles for land in southern Pará state (see Mainwaring 1986 for discussion of the Church's role in Brazil). However, even by the late 1970s the Church was not aware, except in the broadest sense, of the problems brewing in the area of the reservoir. Until then, its involvement with those riverine peasants was restricted to spiritual leadership. The lack of attention to this area was the result of a shortage of priests and church agents rather than a deliberate Church policy to withold support.

In 1980 a chain of events served as the catalyst for the Church's defense of peasants living in the area of the future reservoir. A priest from the riverine town of Cametá, vacationing in Bahia state, on impulse attended an encounter there regarding problems stemming from the Sobradinho dam in that state. A woman who had been involved in the questions surrounding Sobradinho

contacted the priest and arranged to visit Tucurui. She found that people were not receiving indemnifications for their land, and the relocation process was in disarray. She drafted letters to the president of Eletronorte and the bishop outlining the problems. She urged the Church to send a lawyer and an agronomist to the reservoir area to help peasants obtain adequate remuneration during relocation. Eletronorte did not respond to the letter.

By 1982, the situation was explosive. The Church sent personnel to mediate the conflict between Eletronorte and local peasants. The struggle around the reservoir during the next few years has been well-documented by Biery-Hamilton (1987) and others. In the end, relatively few people actually obtained what they felt was fair recompense. However, the Church agents carried the experience from those events to their work with island dwellers.

In 1980 Church agents in Cametá began a movement to transfer control of the Cameta Rural Workers' Union to the peasants. For years, the Union had been controlled by the local elite, some members of which had strong ties to the state and national governments. Following patron-client practice common in the region, leaders ensured the loyalty (and votes) of peasants by providing them with medical and dental services. At the time the Union changed hands, an estimated seventy per cent of the eight thousand members were not rural workers of any sort. Of the remaining thirty per cent, most had never paid union dues. It had been expected practice for the union leaders to automatically update all members' status at election time, regardless of

whether anyone paid dues.

In 1981, the peasants ran on the opposition ticket in the Union elections. They lost the election because they had no previous experience with political procedures and were outmaneuvered by the incumbent's invocation of quorum and absolute majority rules. The next election took place in 1984. Although the opposition ticket won, the election was nullified. Finally in 1985 the peasants won control of the Union.

By this time the Tucurui dam floodgates had been closed, and people all along the river margins and on the islands were beginning to suffer the first of the many problems to come. One of the foremost items on the new Union leaders' agenda was to engage Eletronorte in a dialogue. In October 1986, they arranged a meeting with Eletronorte and its consulting firms, Engevix and Themag, to define Eletronorte's responsibilities regarding the effects of the dam (Eletronorte 1986).

At the first meeting, people complained about the water color, skin and intestinal disorders, and the disappearance of fish. Eletronorte consultants undertook some studies, and in July 1987 concluded that the water was severely contaminated and should not be consumed. They promised to arrange for wells and water storage tanks for an initial group of 10,000 inhabitants, with possibilities to expand the operation. They agreed to install health posts and to train lay health care agents (Comissao Pastoral da Terra 1987).

Eletronorte also concluded that fish were scarce because riverside

towns and islands were increasing in population size. They explained that fish were spoiling quickly because they were contaminated by fishermen's unsanitary fishing practices and by the increase in sewage in the river because of increasing urbanization along rivers[2].

River peasants did not accept Eletronorte's explanation for the scarcity of fish and for the decrease in quality of those fish which remained. They were pleased, however, with Eletronorte's promise to provide potable water and health posts for river dwellers. They decided to wait and see what Eletronorte would do (Comissão Pastoral da Terra 1987).

By 1989, Eletronorte had kept none of its promises. Fish continue to be scarce, there are no wells or water tanks, and no health posts. It is beyond the scope of this study to discuss the role Eletronorte ought to take in attending to island dwellers' needs. Eletronorte's mission is to supply hydroelectric power to the rest of Brazil. Issues such as environmental and social consequences of this task do not enter into the equation, in their view.

Island peasants can no longer make their livelihood because of a fundamental breakdown in their traditional system of sustenance. Fish used to supply food for household consumption and for livestock feed; it was also a medium of exchange. Now families must spend most of their time obtaining food, either by spending much more time catching far less fish than before, or by working for wages which do not even come close to feeding an average family. The margin of survival is increasingly narrow. Clothing, health care

and education no longer enter the equation because people spend all their time, effort and money to obtain food.

The trend in river peasants' thinking currently reflects a certain bitter optimism. They realize that they are up against forces far greater than themselves; regardless of the compelling nature of their predicament, no help seems to be forthcoming from Eletronorte. With encouragement from the Church, some island communities are searching for outside sources of funding from the Canadian government and the Dutch Catholic Church, to address the issues of health care and lack of fish. This new strategy marks a new phase in peasant political identity.

The Tucurui dam was begun in a decade of military dictatorship and unprecedented economic growth, but completed in a decade of political *abertura* and an escalating economic crisis. This national political and economic context places islanders in a dilemma. They now need wage income to sustain themselves but have few opportunities to earn cash. Furthermore, in a cash economy they have to keep up with spiraling national inflation.

At the same time, river peasants do have a voice because of the recent political *abertura*. Their political identity has developed because of the significant damage to their source of livelihood, and because they can speak through the Church and the Workers' Union. The Catholic Church and the Rural Workers'Union have been instrumental in disseminating information to river residents about the Tucurui dam. They provide a powerful network of

communication which connects events in widely-scattered and isolated areas. They thus play a key role in consolidating a new political identity for Amazonian residents as a whole.

Tocantins islanders recently have become part of the regional community of Amazonian peasants, in large measure because of the information they receive through the Church and Union network. Two recent events elsewhere in the Amazon have made islanders aware that their struggle is shared by other groups.

In December 1988, the rubber tapper from Acre state, Francisco "Chico" Mendes, was assassinated (Campbell 1989). Before the assassination, islanders were barely aware of the existence of Acre as a state, let alone the plight of the rubber tappers there. In a matter of days after the event, Chico's death was a common topic of conversation in the Union hall. Chico Mendes became a symbol for peasants suffering the loss of their resource base.

In September 1988 Eletronorte announced a plan to implant 79 more dams in the Amazon river basin by the year 2010. Several of these dams are to be located on the Xingu river, which runs through Kayapo Indian lands. In February 1989, the Kayapo organized a conference in Altamira, Pará state (Schmink 1989) to protest the government's announcement.

People from the Tocantins river attended this conference, some of which were sponsored by the Church and the Union. Upon their return, they noted that if the Indians could win concessions from the government, they as

peasants certainly ought to be able to as well. For the first time, *caboclos* and Indian groups are learning that they share a common cause.

A critical difference between the Tocantins islanders on the one hand, and Chico Mendes and the Indians on the other, is that the latter two were far more sophisticated in their strategies, garnering international support for their struggles. Both Chico and the Kayapo caught the attention of conservation agencies and the World Bank. Their statements made a difference in policy for aid to Brazil's future energy sector projects. In April of this year, the World Bank turned down the request for a loan to Brazil's energy sector.

It remains to be seen whether Tocantins islanders can muster the international support they may need to survive on the islands, or whether they will join the ranks of the other disenfranchised groups competing for scarce land on the mainland.

## Notes

1. Unless otherwise noted, the data for this paper come from questionnaires applied in community of Paruru, taped interviews with Church and Union representatives in Cameta and Tucurui, and taped interviews with riverine dwellers distributed the length of the Tocantins River between the dam and the delta.

2. I have not yet found evidence to support Eletronorte's claims about increasing population and urbanization along the river.

# CHAPTER 8
# RIVER VOICES

This study addresses the profound social change taking place in even the more remote areas of the Amazon, in those areas which have not been so obviously affected by development. Over the last two decades, most of the literature about caboclos has drawn attention to the caboclo groups who live on the terra firme. The development policies for the Amazon region seemed to indicate that a major reorganization of social and economic relationships was taking place. Indeed, we now know that the period between 1970 and 1985 was a time of fundamental change in Amazonia. We know what has happened to those groups whose way of life was changed by the Transamazon highway, the large-scale mining projects such as Carajas and Serra Pelada, and the cattle ranches. In many cases, they have become wage-workers, have moved to cities, or have died in conflicts over land.

In the process of documenting the story of caboclos of the terra firme, we have overlooked the effects of these development policies and projects on caboclo groups who depend on the rivers for their sustenance.

By the time I arrived in Paruru in July of 1988, the community was at a pivotal moment in its history. People felt quite keenly that the way of life they

had known until recently, was no longer a certainty. Based on retrospective data collection, I found that in the past, members of the community relied on the flexibility and heterogeneity of their sustenance strategies to respond to changing pressures on their resource base. A key element of their strategies was the certainty that even if they depleted one specific resource in response to changing demands, they never compromised the key component of their system: the river. As long as they could rely on the river as their clock and pantry, they were assured survival even in the leanest of times.

That certainty no longer exists. Over the past twenty-five years, the national policies which set in motion the intensified development of Amazonia as a whole, have contributed in a significant way to the steady erosion of the riverine resource base. In some instances, the policies have undermined the economic viability of the resource by not including it in governmental subsidy programs. Such is the case with both rubber and cacao. In other instances, governmental incentives have directly contributed to the overexploitation of a resource. Such is the case with wood and fish. The net effect has been a steady decrease in the number of options to which a riverine dweller can turn to make a living. In other words, riverine dwellers such as those in the community of Paruru can no longer respond in the flexible, heterogenous manner characteristic of their culture.

Residents of this riverine community know what fate awaits them. They have spent months of each year in the mainland pepper fields, eating salty

beef jerky instead of fresh fish, traveling by foot on flat dusty roads, and harvesting pepper grown in straight rows, without a tree or the merest stream within sight. They have sat in the Rural Workers Union hall in Cametá, listening to the problems their sharecropping cousins experience. They have slept in their relatives' houses built over sewers in Belém, swatting clouds of mosquitoes and listening for thieves armed with knives and guns.

They conclude that no matter how difficult it might be to remain on the island, it is a far better fate than to have to move to the mainland. Some have chosen to take an active part in the struggle to remain on the island, and have joined the efforts of the Catholic Church and the Rural Workers' Union.

If there is but one lesson to glean from these chapters, it is that change is not a linear, predictable process. Instead, change is a series of moves and countermoves, like a game of three-dimensional chess. The metaphorical game of chess involves several players at any given moment. One player's move sets in motion a series of options and constraints upon which the other players must base their responses. Over time, some of the players leave and new ones take their places, which then sets another dynamic in motion. The game is also perpetual; there is no final outcome. The only thing we know for certain is that the odds are stacked against a certain group of players, in this case the riverine peasants. Even so, they are players in the game, not merely observers; their moves do affect the course of the game.

# GLOSSARY

**Açaí** - the Euterpe oleracea palm whose fruit is the basis of the staple drink on the Tocantins River; its heart can also be processed into palmito, or palm heart.

**Andiroba** - Carapa guianensis, a tree in the Meliaceae family. Its wood is used in construction and is highly prized for charcoal. A medicinal oil, or azeite, is extracted from its fruit. Until the latter third of this century, the oil was an important source of income for Tocantins river inhabitants.

**Azeite** - the generic name for vegetable oil; there are both medicinal and cooking azeites.

**Buriti** - the Mauritia spp. palm. Considered by some to be the most useful of the palms; the trunk, leaves, petioles, and fruits can all be used.

**Caboclo** - an Amazonian peasant, whose cultural heritage is a combination of Iberian, African and Amerindian elements.

**Casco** - small canoe, the basic transportation of Tocantins River islanders.

**Curimatá** - Prochilodus nigrans, a fish in the Curimatidae family. It reaches about 30 centimeters in length, and weighs approximately 450 grams. It is a migratory species, and quite important in the Tocantins River diet. [1]

**Dourada** - Brachyplatostoma flavicans, a catfish in the Pimelodidae family. It occurs primarily in the lower portion of the Tocantins River. It is often caught by trotline. [1]

**Espinhel** - trotline

**Espírito Santo** - the Holy Spirit; the patron saint of many Amazonian communities, including Paruru

**Farinha** - manioc flour; made from the tubers of Manihot esculenta

**Fartura** - plenty, abundance

**Igarapé** - small stream. On the islands, any small stream which cuts through a piece of land; on the mainland, a stream with tea-colored water.

**Ingá** - several species of tleguminous trees of the Inga

**Inverno** - winter, or rainy season roughly from December to May

**Lamparina** - small, kerosene-burning lamp made from discarded tomato or other cans

**Machadinho** - small metal axe used in the Tocantins River islands to tap rubber; the tool is quite different from the knife used by most rubber tappers elsewhere in the Amazon

**Malhadeira** - gill net; placed in the path of a current or tide

**Mapará** - Hypopthalmus marginatus, a fish of the Hypophthalmidae family; it reaches an adult length of 30 centimeters and feeds on zooplankton. It is the most important fish of the Tocantins River island diet, although in recent years it has nearly disappeared from the river. [1]

**Mingau branco** - usually a hot gruel made of manioc flour and water; it can also mean a rice porridge which lacks açai as an ingredient. In either case it connotes an incomplete meal and is a sign of a household's dire economic straits.

**Palmito** - heart of palm, processed with water, salt and an acid from the apical meristem of any one of several palms, including the Euterpe oleracea.

**Peconha** - a sling made of twisted palm leaves, which is hooked around the ankles to help climb an açai or other slender tree trunk

**Piramutaba** - Brachyplatostoma vaillantii. It is a migratory catfish which occurs with greatest frequency in the area around Belém and the lower Amazon River. It reaches 80 centimeters in length and up to eight kilograms in weight; it lives on the river bottom and eats other fish. The Pimelodidae family to which this genus belongs is the third largest in number of species in Amazonia. [1]

**Pirarucu** - Arapaima gigas, a fish of the Osteoglossidae family. It is the largest scaled, freshwater fish in Brazil, and one of the largest in the world. It is also known as 'the Brazilian codfish'. It can attain more than two meters in length, and can weigh over 100 kilograms. In the Tocantins River region, pirarucu is primarily available from other rivers and in its dried and salted form because severe fishing pressures have seriously depleted stocks from the Tocantins River. [1]

**Roçar** - to weed

**Taberna** - small dry-goods store carrying items such as kerosene, coffee, sugar, antacid tablets, anti-malarial medication, laundry soap, and candy

**Tarrafa** - cast, or throw, net; it requires two people to use it, one to paddle the canoe and one to throw the net

**Uruá** - snail whose shell is used by Tocantins River island dwellers to collect the latex from rubber trees

**Verão** - summer, or dry season lasting roughly from June to November

**Virola** - Tree of the Virola belonging to the Myristicaceae family. In the Tocantins River islands, the most common species is Virola surinamensis. It is known in English as the 'Amazonian nutmeg', and in the islands, as ucuuba. Its wood is used for construction. Its fruits contain an oil once highly prized for use in soaps, candles and cosmetics, as well as for a vegetable dye.

[1] from dos Santos, Geraldo Mendes et al., 1984.

## REFERENCES


Anderson, Robin
1985 The caboclo as revolutionary: The Cabanagem Revolt 1835-1836. In Parker, Eugene Philip, ed., The Amazon Caboclo: Historical and Contemporary Perspectives. Studies in Third World Societies Publication Number 32. Department of Anthropology, College of William and Mary: Williamsburg, Virginia.

Barbira-Scazzochio, F., ed.
1980 Land, People and Planning in Contemporary Amazonia. Cambridge University Press: Cambridge.

Biery-Hamilton, Gay
1987 Coping with Change: The Impact of the Tucurui Dam on an Amazonian Community. M.A. thesis, University of Florida, Gainesville.

Brabo, Maria José Carvalho
1981 Pescadores, geleiros, fazendeiros: Os conflitos de pesca em Cachoeira do Arari (Nota Prévia). Boletim do Museu Paraense Emilio Goeldi (Antropologia) 77:1-22.

Browder, John
1986 Logging the Rainforest: A Political Economy of Timber Extraction and Unequal Exchange in the Brazilian Amazon. Ph.D. dissertation, University of Pennsylvania.

Bunker, Stephen G.
1980 Forces of destruction in Amazonia. Environment 2:14-43.

Bunker, Stephen G.
1981 The impact of deforestation on peasant communities in the Medio Amazonas of Brazil. Studies in Third World Societies 13:45-60.

Bunker, Stephen G.
1985 Underdeveloping the Amazon. University of Illinois Press: Urbana.

Buschbacher, Robert J., Christopher Uhl, and E.A.S. Serrão
1987 Large-scale development in Eastern Amazonia; Case study no. 10: Pasture management and environmental effects near Paragominas, Pará. In Jordan, C. F., ed., Amazonian Rain Forests; Ecosystem Disturbance and Recovery. Springer-Verlag: New York.

Butler, John R.
1985 Land, Gold, and Farmers: Agricultural Colonization and Frontier Expansion in the Brazilian Amazon. Ph.D. dissertation, University of Florida.

Campbell, Constance
1989 Community mobilization and education for conservation: A case study of the rubber tappers in Acre, Brazil. Latinamericanist 24:2-7.

Chayanov, A.V.
1966 The Theory of Peasant Economy. The University of Wisconsin Press: Madison, Wisconsin.

Cleary, David
1990 Anatomy of the Amazon Gold Rush. MacMillan: Oxford.

Commissão Pastoral da Terra
1987 Ata do encontro entre a Eletronorte, Engevix, FSESP, INAMPS, Prelazia de Cametá, Sindicato dos Trabalhadores Rurais e Comunidades Cristãs da região do Baixo Tocantins. CPT: Cametá.

Dean, Warren
1969 The Industrialization of São Paulo, 1880-1945. University of Texas Press: Austin.

Dean, Warren
1987 Brazil and the Struggle for Rubber. Cambridge University Press: New York.

de Mello, Alex Fiuza
1984a Os Posseiros do Mar: Expansão Capitalista no Setor Pesqueiro Amazônico. Ciências Sociais Hoje. Cortez: São Paulo.

de Mello, Alex Fiuza
1984b A tecnologia a serviço da dominação (os posseiros do mar). In Anais do Primeiro Seminário Sobre a Pesca Artesanal. IDESP: Belém, Pará.

Denevan, William
1976 The aboriginal population of Amazonia. In W. Denevan, ed., The Native Population of the Americas in 1492. University of Wisconsin Press: Madison.

dos Santos, Geraldo Mendes, Michel Jegu and Bernard de Merona
1984 Catálogo de Peixes Comerciais do Baixo Rio Tocantins. Eletronorte/ Instituto Nacional de Pesquisas da Amazônia, Manaus: Amazonas.

Egler and Horst Schwassman
1964 Limnological studies in the Amazon estuary. Verh. Internat. Verein. Limnol. 15:1059-1066.

Eletronorte (transcriber)
1986 VI Encontro do Anilzinho, 16 de outubro de 1986, Brasília. Archives of the Commissão Pastoral da Terra, Cametá, Pará, Brazil.

Eletronorte
1987 UHE Tucurui-Plano de Utilização do Reservatório-Programa Especial de Avaliação dos Problemas Referentes à Pesca e ao Pescado no Trecho de Jusante da UHE Tucurui; Apresentação dos Resultados. PIP-Efeitos Ambientais à Jusante, P4. Report number TUC-10-26.321-RE. Brasília.

Foweraker, Joseph
1981 The Struggle for Land: A Political Economy of the Pioneer Frontier in Brazil, 1930 to the Present. Cambridge University Press: London.

Furtado, Lourdes Gonçalves
1984 Onde os pescadores estão pendurando suas redes. In Anais do Primeiro Seminário Sobre a Pesca Artesanal. IDESP: Belém, Pará.

Furtado, Lourdes Gonçalves
1987 Curralistas e Redeiros de Marudá: Pescadores do Litoral do Pará. Museu Paraense Emilio Goeldi: Belém/ CNPq: Brasilia.

Galvão, Eduardo
1976[1956] Santos e Visagens. Brasiliana volume 24. Companhia Editora Nacional: São Paulo.

Goldsmith, Edward and Nicholas Hildyard
1984 The Social and Environmental Effects of Large Dams. Sierra Club: San Francisco.

Goulding, Michael
1981 Man and Fisheries on an Amazon Frontier. Dr. W. Junk Publishers: The Hague.

Harris, Marvin
1979 Cultural Materialism: The Struggle for a Science of Culture. Random House: New York.

Hecht, Susanna B.
1985 Environment, development and politics: Capital accumulation and the livestock sector in eastern Amazonia. World Development 13(6):663-684.

Hemming, John
1978 Red Gold: The Conquest of the Brazilian Indians, 1500-1760. Harvard University Press: Cambridge.

Instituto do Desenvolvimento Econômico-Social do Pará (IDESP)
1984 Anais do Primeiro Seminário Sobre a Pesca Artesanal. IDESP: Belém, Pará.

Lessa, Renato de Andrade
1984 Pescadores e cidadãos: o caso de Itaipu. In Anais do Primeiro Seminário Sobre a Pesca Artesanal. IDESP: Belém, Pará.

Long, Norman, ed.
1984 Family and Work in Rural Societies; Perspectives on Non-Wage Labor. Tavistock Publications: London.

Loureiro, Violeta Refkalefsky
1984 Modernização e conflito numa população de pescadores do Pará. In Anais do Primeiro Seminário Sobre a Pesca Artesanal. IDESP: Belém, Pará.

Loureiro, Violeta Refkalefsky
1985 Os Parceiros do Mar; Natureza e Conflito Social na Pesca da Amazonia. Museu Paraense Emilio Goeldi: Belém/ CNPq: Brasília.

Lowe-McConnell, Rosemary H.
1984 The status of studies on South American freshwater food fishes. In Zaret, Thomas M., ed., Evolutionary Ecology of Neotropical Freshwater Fishes. Dr. W. Junk Publishers: The Hague.

Lowe-McConnell, Rosemary H.
1987 Ecological Studies in Tropical Fish Communities. Cambridge University Press: London.

Mahar, Dennis
1979 Frontier Development Policy in Brazil: A Study of Amazonia. Stanford University Press: Stanford, California.

Mainwaring, Scott
1986 The Catholic Church and Politics in Brazil 1916-1985. Stanford University Press: Stanford, California.

Maltez, Herberto Tocantins and Maria Gil Maltez
1984 Efeitos da barragem de Tucurui em Belém. O Liberal, July 15.

Maneschy, Maria Cristina Alves
(unpublished) Pescadores de Bragança: Estudo Sobre Trabalho e Subordinação na Pesca Artesanal. Research proposal presented to the Universidade Federal do Pará/NAEA: Belém, Pará.

Maués, Maria Angélica Motta
1984 A literatura oficial sobre a pesca na Amazônia: Uma tentativa de revisão crítica. In Anais do Primeiro Seminário Sobre a Pesca Artesanal. IDESP: Belém, Pará.

Miller, Darrel
1975 Amazon Town: 1948-1974. M.A. thesis, University of Florida: Gainesville.

Miller, Darrel
1985 Highways and gold: Change in a caboclo community. In Parker, Eugene Philip, ed., The Amazon Caboclo: Historical and Contemporary Perspectives. Studies in Third World Societies Publication Number 32. Department of Anthropology, College of William and Mary: Williamsburg, Virginia.

Moran, Emilio F.
1974 The adaptive system of the Amazonian caboclo. In Wagley, Charles, ed., Man in the Amazon. The University Presses of Florida: Gainesville, Florida.

Moran, Emilio F.
1975 Pioneer Farmers of the Transamazon Highway: Adaptation and Agricultural Production in the Lowland Tropics. Ph.D. dissertation, University of Florida: Gainesville.

Moran, Emilio F.
1979 The Trans-Amazonica: Coping with a new environment. In Margolis, Maxine L. and Carter, William E., eds., Brazil: Anthropological Perspectives. Columbia University Press: New York.

Moran, Emilio F.
1981 Developing the Amazon. Indiana University Press: Bloomington, Indiana.

Moran, Emilio F., ed.
1983 The Dilemma of Amazonian Development. Westview Press: Boulder.

Moreira Neto, Carlos de Araujo
1988 Indios da Amazônia, de Maioria a Minoria (1750-1850). Vozes: Petrópolis.

Mougeot, Luc
1987 O reservatório da usina hidrelétrica de Tucuruí, Pará, Brasil: Uma avaliação do programa de reassentamento populacional (1976-1985). In Homem e Natureza na Amazônia. Tubinger Geographische Studien, 95:387-404.

Nascimento, Ivete
1984 Exodo populacional em uma comunidade pesqueira-Tamaruteua. In Anais do Primeiro Seminário Sobre a Pesca Artesanal. IDESP: Belém, Pará.

O mal que virá de tudo que ficar sob o lago de Tucuruí.
1984 O Liberal. February 14, 1984.

O'Reilly Sternberg, Hilgard
1975 The Amazon River of Brazil. Franz Steiner Verlag GMBH: Wiesbaden.

Pace, Richard
1987 Economic and Political Change in the Amazonian Community of Itá, Brazil. Ph.D. dissertation, University of Florida.

Parker, Eugene Philip
1981 Cultural Ecology and Change: A Caboclo Varzea Community in the Brazilian Amazon. Ph.D. dissertation. University Microfilms International: Ann Arbor, Michigan.

Parker, Eugene Philip, ed.
1985a The Amazon Caboclo: Historical and Contemporary Perspectives. Studies in Third World Societies Publication Number 32. Department of Anthropology, College of William and Mary: Williamsburg, Virginia.

Parker, Eugene Philip
1985b The Amazon caboclo: An introduction and overview. In Parker, Eugene Philip, ed., The Amazon Caboclo: Historical and Contemporary Perspectives. Studies in Third World Societies Publication Number 32. Department of Anthropology, College of William and Mary: Williamsburg, Virginia.

Parker, Eugene Philip
1985c Caboclization: The transformation of the Amerindian in Amazonia 1615-1800. In Parker, Eugene Philip, ed., The Amazon Caboclo: Historical and Contemporary Perspectives. Studies in Third World Societies Publication Number 32. Department of Anthropology, College of William and Mary: Williamsburg, Virginia.

Penner, Maria Eunice Soares
1984 Modernização e mudança. In Anais do Primeiro Seminário Sobre a Pesca Artesanal. IDESP: Belém, Pará.

Richey, Jeffrey, C. Nobre and C. Deser
1989 Amazon River discharge and climate variability: 1903 to 1985. Science 246:101-104.

Ribeiro Neto, José
1984 Valorização da pesca artesanal do Estado do Pará. In Anais do Primeiro Seminário Sobre a Pesca Artesanal. IDESP: Belém, Pará.

Roosevelt, Anna C.
1980 Parmana; Prehistoric Maize and Manioc Subsistence Along the the Amazon and Orinoco. Academic Press: New York.

Roseberry, William
1988 Anthropologies and Histories; Essays in Culture. Rutgers University Press: New Brunswick.

Ross, Eric B.
1978 The evolution of the Amazon peasantry. Journal of Latin American Studies 10(2): 193-218.

Salati, Eneas and P.B. Vose
1984 Amazon Basin: a system in equilibrium. Science 225(4658):129-138.

Salo, Jukka, R. Kalliola, I Hakkinen et. al.
1986 River dynamics and diversity of the Amazon lowland forest. Nature 322:254-258.

Santos, Gerardo M., M. Jegu and B. de Merona
1984 Catálogo de Peixes Comerciais do Baixo Rio Tocantins: Projeto Tucurui. Eletronorte/CNPq/INPA: Manaus.

Sawaki, Henrique Kiyoehi
1984 Extensão pesqueira no Estado do Pará: A pesca artesanal no Pará 1974-1981. In Anais do Primeiro Seminário Sobre a Pesca Artesanal. IDESP: Belém, Pará.

Schmink, Marianne
1979 Community in Ascendance: Urban Industrial Growth and Household Income Strategies in Belo Horizonte, Brazil. Ph.D. dissertation, University of Texas: Austin.

Schmink, Marianne
1982 Land conflicts in Amazonia. American Ethnologist 9(2):341-357.

Schmink, Marianne
1985a Social change in the garimpo. In Hemming, J., ed., The Frontier After a Decade of Colonisation. Change in the Amazon Basin, vol. 2. University of Manchester Press: Manchester.

Schmink, Marianne
1985b Sao Felix do Xingu: A caboclo community in transition. In Parker, Eugene Philip, ed., The Amazon Caboclo: Historical and Contemporary Perspectives. Studies in Third World Societies Publication Number 32. Department of Anthropology, College of William and Mary: Williamsburg, Virginia.

Schmink, Marianne
1989 Contesting the military in Amazonia, 1979-1989. Paper presented at the workshop entitled "Amazonia Ecological Disorder: A 1989 Assessment", Rio de Janeiro, August 27-September 1, 1989.

Schmink, Marianne and Charles H. Wood, eds.
1984 Frontier Expansion in Amazonia. University of Florida Press: Gainesville, Florida.

Schmink, Marianne and Charles H. Wood
1987 The 'political ecology' of Amazonia. In Little, P.D. and Horowitz, M., eds., Lands at Risk in the Third World. Westview Press: Boulder, Colorado.

Schmink, Marianne and Charles H. Wood
(forthcoming) Contested Frontiers in Amazonia.

Schnuettgen, Fr. Alfredo
1984 Breve histórico das colônias de pescadores. In Anais do Primeiro Seminário Sobre a Pesca Artesanal. IDESP: Belém, Pará.

Sioli, Harald
1967 Studies in Amazonian waters. Atas do Simpósio sobre a Biota Amazônica 3:9-50.

Sioli, Harald
1968 Hydrochemistry and geology in the Brazilian Amazon region. Amazoniana 1(3): 267-277.

Sioli, Harald
1975 Tropical rivers as expressions of their terrestrial environment. In Golley, F.B. and E. Medina, eds., Tropical Ecological Systems. Springer-Verlag: New York.

Sioli, Harald
1984 The Amazon and its main affluents: Hydrography, morphology of the river courses, and river types. In Harald Sioli, ed., The Amazon; Limnology and Landscape Ecology of a Mighty Tropical River and its Basin. Dr. W. Junk Publishers: Dordrecht.

Smith, Nigel J. H.
1981 Man, Fishes and the Amazon. Columbia University Press: New York.

Sweet, David
1974 A Rich Realm of Nature Destroyed: The Middle Amazon, 1640-1750. Ph.D. dissertation, University of Wisconsin: Madison.

Usina de Tucuruí foi erguida sobre falha geológica.
1986 Jornal do Brasil. March 8, 1986.

Wagley, Charles
1976[1956] Amazon Town: A Study of Man in the Tropics. Oxford University Press: New York.

Wagley, Charles
1985 The Amazon caboclo. In Parker, Eugene Philip, ed., The Amazon Caboclo: Historical and Contemporary Perspectives. Studies in Third World Societies Publication Number 32. Department of Anthropology, College of William and Mary: Williamsburg, Virginia.

Weinstein, Barbara
1983 The Amazon Rubber Boom 1850-1920. Stanford University Press: Stanford, California.

Weinstein, Barbara
1985 Persistence of caboclo culture in the Amazon: The impact of the rubber trade, 1850-1920. In Parker, Eugene Philip, ed., The Amazon Caboclo: Historical and Contemporary Perspectives. Studies in Third World Societies Publication Number 32. Department of Anthropology, College of William and Mary: Williamsburg, Virginia.

Wesche, Rolf
1985 The transformation of rural caboclo society upon integration into Brazil's Amazonian frontier: a study of Itacoatiara. In Parker, Eugene Philip, ed., The Amazon Caboclo: Historical and Contemporary Perspectives. Studies in Third World Societies Publication Number 32. Department of Anthropology, College of William and Mary: Williamsburg, Virginia.

Wilson, John
1985 Ariquemes: Settlement and Class in a Brazilian Frontier Town. Ph.D. dissertation, University of Florida.

Wood, Charles H.
1981 Structural changes and household strategies: A conceptual framework for the study of rural migration. Human Organization 40(winter):338-344.

# BIOGRAPHICAL SKETCH

Pennie L. Magee was born in Denver, Colorado. She lived the first fifteen years of her life in Brazil. In 1976, she was graduated from St. Columban's School, Carnaxide, Portugal. She received her B.A. in anthropology from Wheaton College, Wheaton, Illinois in 1980, and her M.A. in anthropology from the University of Florida in 1986. At present she is the Program Administrator for the Tropical Conservation and Development Program at the Center for Latin American Studies, University of Florida.

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

Marianne Schmink, Chair
Associate Professor, Anthropology

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

Maxine L. Margolis
Professor, Anthropology

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

Leslie S. Lieberman
Associate Professor, Anthropology

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

Anthony Oliver-Smith
Associate Professor, Anthropology

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

Kent H. Redford
Assistant Professor, Latin American Studies

This dissertation was submitted to the Graduate Faculty of the Department of Anthropology in the College of Liberal Arts and Sciences and to the Graduate School and was accepted as partial fulfillment of the requirements for the degree of Doctor of Philosophy.

December 1990

Dean, Graduate School

UNIVERSITY OF FLORIDA
3 1262 08554 5993